

**Multispecies Trawl Survey of Hecate
Strait, *F/V Viking Storm*, June 10 - 28,
2002**

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by

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ABSTRACT

Choromanski, E.M., J. Fargo, G.D. Workman, and K. Mathias. 2004. Multispecies trawl survey of Hecate Strait, *F/V Viking Storm*, June 10 – 28, 2002. Can. Data Rep. Fish. Aquat. Sci. 1124: 81 p.

The *F/V Viking Storm* was chartered to conduct a multispecies survey of Hecate Strait between June 10 – 28, 2002. The primary objective of the survey was to assess the abundance of flatfish species on selected fishing grounds. Secondary objectives included collecting detailed biological data on multispecies community structure within the Hecate Strait ecosystem. Both objectives are supplementary to the development of an ecosystem approach to fisheries management in Hecate Strait. A total of 96 tows were performed during the cruise. Two sets were unusable due to gear fouling. A total of 63 species of groundfish, weighing 55,774 kg were caught during the survey of which 34,863 kg were flatfishes and 13,065 kg were selachii. In addition, 71 invertebrate species that comprising 1,222 kg were caught. The most abundant species were arrowtooth flounder (*Atheresthes stomias*) (12, 042 kg) and spotted ratfish (*Hydrolagus coliei*) (9,547 kg)

Biological information was gathered from 47,956 fish over 35 species. Length frequency data sorted by sex were collected from 8,281 English sole (*Pleuronectes vetulus*), 6,105 rex sole (*Errex zachirus*), 4,966 arrowtooth flounder, 4,819 rock sole (*Pleuronectes bilineatus*), 4,092 Dover sole (*Microstomus pacificus*), among many other species. Length and weight data were collected from 1,580 Pacific Cod (*Gadus macrocephalus*) as well as 159 randomly selected stomach samples. Otoliths, maturity, sex, length and weight data were collected from 600 English sole, 200 rex sole, 932 rock sole, and 669 Dover sole. This report summarises the bridge log, catch and biological data obtained during the 2002 survey.

RÉSUMÉ

Choromanski, E.M., J. Fargo, G.D. Workman, and K. Mathias. 2004. Multispecies trawl survey of Hecate Strait, *F/V Viking Storm*, June 10 – 28, 2002. Can. Data Rep. Fish. Aquat. Sci. 1124: 81 p.

Le *F/V Viking Storm* a été affrété pour effectuer un relevé plurispécifique dans le détroit d'Hecate du 10 au 28 juin 2002. Le relevé avait comme objectif principal d'évaluer l'abondance des espèces de poissons plats dans certains lieux de pêche. Un objectif secondaire a consisté à recueillir des données biologiques détaillées sur la structure des communautés de poissons dans l'écosystème du détroit d'Hecate. Ces deux objectifs s'inscrivent dans le cadre de l'élaboration d'une démarche de gestion écosystémique des pêches dans le détroit d'Hecate. Au total, 96 traits de chalut ont été réalisés durant la croisière de recherche, dont deux qui étaient inutilisables en raison du mauvais fonctionnement de l'engin. Soixante-trois espèces de poissons de fond ont été capturées durant le relevé, pour un poids total de 55 774 kg, dont 34 863 kg de poissons plats et 13 065 kg de sélaciens, en plus de 71 espèces d'invertébrés totalisant 1 222 kg. Les espèces les plus abondantes étaient la plie à grande bouche, *Atheresthes stomias* (12 042 kg), et la chimère d'Amérique, *Hydrolagus coliei* (9 547 kg).

Des données biologiques ont été recueillies sur 47 956 poissons de plus de 35 espèces. Des données de fréquence de taille par sexe ont été obtenues pour 8 281 carlottins anglais (*Pleuronectes vetulus*), 6 105 plies royales (*Errex zachirus*), 4 966 plies à grande bouche, 4 819 fausses limandes (*Pleuronectes bilineatus*) et 4 092 limandes-soles (*Microstomus pacificus*), entre autres espèces. En plus de 159 estomacs échantillonnés aléatoirement, des données de longueur et de poids ont été recueillies sur 1 580 morues du Pacifique (*Gadus macrocephalus*). Des otolithes ainsi que des données sur la maturité, le sexe, la longueur et le poids ont été recueillis pour 600 carlottins anglais, 200 plies royales, 932 fausses limandes et 669 limandes-soles. Le présent rapport résume le registre de bord, les captures et les données biologiques du relevé 2002.

INTRODUCTION

The Hecate Strait multispecies groundfish bottom trawl survey initiated in April 1984 and conducted usually every 2 years, provides the longest running time series of fisheries independent groundfish surveys on the west coast. The 2002 survey is the tenth in a series conducted in 1984, 1986, 1987, 1989, 1991, 1993, 1995, 1996, 1998, and 2000 (Fargo *et al.* 1984, 1986, 1988; Westrheim *et al.* 1984; Antonsen *et al.* 1990; Wilson *et al.* 1991; Hand *et al.* 1994; Workman *et al.* 1997; Choromanski *et al.* 1998, 2000). Although secondary objectives varied with the survey years, the primary, long term objective of the Hecate Strait survey was to conduct ecosystem – based research for multispecies stock assessment and management of groundfish in the Hecate Strait region. While multispecies stock assessment strategies are being developed the systematic survey of Hecate Strait provides adequate spatial and temporal coverage to monitor changes in abundance of target species, and to provide comprehensive data for stock assessment purposes. Detailed species composition and biological data were collected for species encountered during the survey including length frequencies, weight, sex, maturity and otoliths for age determination. This information is essential for stock assessment to support management of the ground trawl fishery.

METHODS AND MATERIALS

SURVEY DESIGN

The trawl survey was stratified by area and depth but the allocation of stations within depth strata was non-random. Each stratum consisted of a sampling grid of 10 nm² blocks within each block, every 18.3 m (10 fathom) depth stratum was potentially sampled. The specific placement and direction of the tow within each depth stratum was left to the discretion of the skipper. The grid area encompassed Lat. 52°30' N and Lon. 130°5' W to Lat. 54°30' N and Lon. 131°45' W (Figure 1). The blocks were used for the placement of individual tows. Blocks were labelled A to L from north to south, and 1 to 6 west to east. The survey covered a depth range of 18.3 m to 146.3 m (10 to 80 fathoms). The specific placement and direction of the tow within each depth stratum was left to the discretion of the skipper.

FISHING VESSEL AND GEAR

The Fishing Vessel *Viking Storm* was a 31.7 m steel hull West Coast trawler, chartered for the duration of the survey. Kelly Anderson skippered the vessel. The vessel was constructed in 1981 and equipped with a 980 hp. KTA Cummins engine achieving a cruising speed of 10 knots. Detailed vessel specifications can be found in Appendix 2. The vessel was equipped with several video depth sounders, (Furuno Model FCV 782 28/50 kHz dual and Furuno Model 261 50 kHz), Global Positioning System, computer navigation system Nobeltak and Seaplot, radar and communications equipment. The vessel was also equipped with net monitoring equipment (Scanmar Symmetry Sensors, Model Scanmar RX 400) measuring door spread, trawl speed and catch monitor. The vessel was equipped with two Yankee trawl nets one designed for

hard bottom use and the other for soft bottom (Figure 2.) and Thyborn Type 2 trawl doors. The Yankee 36 bottom trawl net had 8.75 cm mesh in the wing, 8.75 cm in the body, 8.75 cm in the intermediate, 8.75 cm in the codend with the 2.5 cm codend liner. The headline was 18.3 m long and hung with forty 20-cm diameter plastic floats. The net was connected to the trawl doors by 36.6 m bridle/sweep lines. The Yankee 36 hard bottom footrope was modified by chain with toggle and half round bobbins. The decision to deploy the hard bottom net was based on sounding and bathymetry from the chart.

CATCH AND SAMPLE PROCESSING

The total catch was emptied on deck into a fish holding bin in the stern of the vessel and moved by outside conveyor to the sampling area inside. Sorting by species into separate baskets was done as the catch made its way along the fish lab conveyor. The total weight for each species was recorded. Each specimen sampled was measured for length in millimetres and weighed using an electronic top-loading balance (Marel Model 2200 with 6 kg capacity). Random baskets were selected for biological sampling. Length frequency was recorded by sex for all species. Target species for biological sampling included arrowtooth flounder, Dover sole, flathead sole (*Hippoglossoides elassodon*), English sole, rock sole, rex sole, starry flounder (*Platichthys stellatus*), curlfin sole (*Pleuronichthys decurrens*), butter sole (*Pleuronectes isolepis*), Pacific sandbar (*Citharichthys sordidus*), slender sole (*Eopsetta exilis*), Pacific cod, petrale sole (*Eopsetta jordani*), spiny dogfish (*Squalus acanthias*), spotted rattfish (*Hydrolagus colliei*), big skate (*Raja binoculata*), longnose skate (*Raja rhina*), sandpaper skate (*Bathyraja interrupta*), walleye Pollock (*Theragra chalcogramma*), sablefish (*Anoplopoma fimbria*), bocaccio (*Sebastes paucispinis*), Yellowtail rockfish (*Sebastes ruberrimus*), copper rockfish (*Sebastes caurinus*), quillback rockfish (*Sebastes maliger*), and Pacific ocean perch (*Sebastes alutus*).

The data were fitted to the power function model for weight as a function of length.

$$W_i = a L_i^b$$

where W_i is weight units of fish i , L_i is length units of fish i and a , b are estimated parameters.

The body cavity was exposed to determine the sex and the level of maturation (Appendix 1). In addition, otoliths extracted for age determination were cleaned and stored in a 50:50 solution of glycerine/water with 1 g thymol added per litre (MacLellan, 1999). Otolith samples were later processed in the Aging Laboratory at the Pacific Biological Station.

RESULTS

FISHING OPERATIONS

A total of 96 bottom trawls were completed during the cruise. Tows 60 and 68 were not usable. The summary of trawl stations occupied during the survey is presented in Table 1 and Figure 1. Fishing operations commenced at the North East

presented in Table 1 and Figure 1. Fishing operations commenced at the North East end of Laskeek Bank and proceeded northwest to Dixon Entrance. The most northerly tow (#82) was made off Dundas Island. Tows 12 and 55 were sub-sampled (Westrheim 1967) due to the large catch.

CATCH DATA

The total catch was 55,774 kg, which comprised 63 species of fish and 71 species of invertebrates. The total catch for each species and frequency of occurrence are presented in Table 2. During the survey, 47,548 fish were sampled for length from 34 species.

BIOLOGICAL DATA

An inventory of biological samples collected during the survey is presented in Table 3. Otoliths, maturity, sex, length and weight were collected from 600 English sole, 200 rex sole, 931 rock sole, and 669 Dover sole.

Length, sex, maturity and otoliths for age determination (LSMO) were collected for 4,631 specimens from 22 species. Table 3 summarizes the biological samples sorted by species and tow indicating numbers of males and females, plus collected and preserved structures. Table 4 contains a summary of specimen attributes recorded or collected by species. Table 5 summarizes number of samples collected by morphometrics attribute.

Summary statistics for length and weight composition data by species are presented in Table 6. The length statistics are based on the entire catch sampled but weight statistics were determined from length - weight samples only. The fitted length - weight relationships by sex are presented for English sole, Dover sole, Rock sole, Arrowtooth flounder, Petrale sole, Pacific cod and Lingcod in Figures 4, 7, 10, 13, 16, 19 and 22 respectively. Statistical parameters for length - weight relationship are presented in Table 7.

English sole

Major assemblage of English sole were abundant at the Butterworth location. The total catch of English sole was 6,326 kg, comprising 11.4% of the total catch. The length statistics are based on the entire catch sampled but weight statistics were determined from length - weight samples only. Length frequency histograms (Fig.3) show that males ranged from 110 - 480 mm with a mode at 250 mm; females ranged from 110 mm - 490 mm with the modes at 200 and 350 mm. English sole occurred in 88 tows and a total of 600 otoliths were collected from a spectrum of the entire survey and variety of depth strata. The fitted length - weight relationships by sex are presented in Figure 4. Regression parameters for this species are presented in Table 5 indicating the 95% confidence intervals. Females dominated the samples and were in the higher range of weight and length. English sole had similar proportions of males (24.8%) and females (26%) in the resting stage (Figure 5). Also, 42 % of the males were spent

compared to 1.6 % of females. There was a high proportion of immature females 33.4% compared to males 24.2 %.

Dover sole

Dover sole occurred mostly in tows 22, 23 and 27 and it was a seasonal species (summer) in the Butterworth, Two Peaks and White Rocks locations. Males ranged from 150 - 520 mm in length with modes at 310 mm. Female Dover sole ranged from 150 - 660 mm in length with modes at 250 mm and 350 mm (Fig 6). Length and sex were recorded for 4080 specimens of Dover sole. A total of 669 otoliths were collected from Dover sole (Table 3.) The length – weight regression for Dover sole is presented in Figure 7. Females weighed significantly more than males of the same length after fish reached a size of about 450 mm. For Dover sole, 53% of males were spent compared to 1.5 % of the females (Figure 8). A similar proportion of males and females were resting, and 43.5 % of the females were immature compare to 8.5 % of males.

Rock sole

Length frequency histograms (Fig. 9) show that male rock sole ranged from 80 - 470 mm with a mode at 200 mm; females ranged from 90 - 550 mm with the mode at 210 mm. A total of 932 otoliths were collected. Length – weight relationships for rock sole are presented in Figure 10, and regression parameters are given in Table 7. Half of both males and females were in maturity stage 1 indicating a new recruitment (Fig. 11). Similar proportions of males (19 %) and females (17 %) were in the resting stage.

Arrowtooth flounder

The length frequency distribution for males and females are presented in Figure 12. A strong mode was present at 430 mm for males and for the females at 570 mm. A total of 4966 arrowtooth flounder were sampled. Length – weight relationship by sex is presented in Figure 13 and the summary regression parameters are presented in Table 7. Most arrowtooth flounder were in the resting stage (Figure 14) 68 % for males and 77 % for females.

Petrale sole

Petrale sole occurred in 47 tows. Otoliths were collected from 359 of 374 specimens caught. Females dominated the catch with the mode at 270 mm (Fig. 15). Lengths ranged from 170 - 590 mm and the mode for males was also at 270 mm. Length – weight regressions were completed (Fig.16, Table 7). Forty six percent of females and 35 % of males were in the resting stage of maturity. Also 42 % of males and 32 % of females were in the immature stage (Fig. 17).

Other Samples

Juvenile Pacific halibut (*Hippoglossus stenolepis*) were collected in a joint study with the International Pacific Halibut Commission. The samples were frozen for further DNA analyses.

Biological sampling occurred on two main Elasmobranch species: Big skate (*Raja binoculata*) and Longnose skate (*Raja rhina*). Length, weight, wing span, sex, maturity, and stomach contents were recorded. Skate vertebrae were collected and frozen for future development of age determination methods.

Stomachs were collected from 159 Pacific cod, for analysis. Second dorsal fin was collected from lingcod for age determination. Figures 18 to 23 are representing the species but further analysis for those species will be presented elsewhere.

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Table 1. Summary of trawl stations during the 2002 Hecate Strait multispecies survey on the *F/V Viking Storm*.

Haul Number	Date	Block Depth	Fishing Location	Total Catch (kg)	Effort (h)
1	11-Jun-02	B104	MCINTYRE BAY	549.3	0.500
2	11-Jun-02	B103	MCINTYRE BAY	810.2	0.500
3	11-Jun-02	B106	MCINTYRE BAY	815.5	0.500
4	11-Jun-02	B107	MCINTYRE BAY	730.5	0.500
5	11-Jun-02	B103	WEST TWO PEAKS	1363.5	0.550
6	11-Jun-02	B106	MCINTYRE BAY	1437.6	0.500
7	12-Jun-02	B201	TWO PEAKS	156.2	0.517
8	12-Jun-02	B202	TWO PEAKS	586.6	0.500
9	12-Jun-02	B204	TWO PEAKS	1136.9	0.333
10	12-Jun-02	B202	TWO PEAKS	450.9	0.333
11	12-Jun-02	B205	TWO PEAKS	1458.7	0.333
12	12-Jun-02	B204	TWO PEAKS	1230.0	0.333
13	12-Jun-02	B207	TWO PEAKS	971.6	0.500
14	16-Jun-02	A205	TWO PEAKS	1800.1	0.333
15	13-Jun-02	A206	S OF BARREN ISLAND	835.4	0.500
16	13-Jun-02	A307	DUNDAS	547.5	0.500
17	13-Jun-02	A307	DUNDAS	942.7	0.500
18	13-Jun-02	A306	TWO PEAKS	636.5	0.333
19	13-Jun-02	A305	TWO PEAKS	974.8	0.383
20	13-Jun-02	A303	TWO PEAKS	543.3	0.367
21	13-Jun-02	B302	BUTTERWORTH	277.8	0.500
22	14-Jun-02	B306	BUTTERWORTH	2495.1	0.383
23	14-Jun-02	B306	BUTTERWORTH	2495.2	0.333
24	14-Jun-02	B301	BUTTERWORTH	622.8	0.500
25	14-Jun-02	B301	BUTTERWORTH	467.5	0.500
26	14-Jun-02	B306	BUTTERWORTH	1020.7	0.333
27	14-Jun-02	B304	BUTTERWORTH	5000.1	0.367
28	14-Jun-02	B301	BUTTERWORTH	35.6	0.333
29	15-Jun-02	C305	BUTTERWORTH	1241.9	0.250
30	15-Jun-02	C201	BUTTERWORTH	735.1	0.500
31	15-Jun-02	C201	BUTTERWORTH	312.2	0.333
32	15-Jun-02	C301	BUTTERWORTH	220.4	0.500
33	15-Jun-02	C304	BUTTERWORTH	1814.9	0.333
34	15-Jun-02	D301	FINGERS	61.0	0.333
35	15-Jun-02	D201	UNKNOWN	283.4	0.417
36	15-Jun-02	D302	FINGERS	140.8	0.333
37	15-Jun-02	D304	OVAL HILLII	574.2	0.333
38	16-Jun-02	E202	SW SEAL ROCKS	731.1	0.500
39	16-Jun-02	E301	UNKNOWN	183.6	0.500
40	16-Jun-02	E302	VENUS	93.5	0.333
41	16-Jun-02	D404	OVAL HILLII	785.6	0.333
42	16-Jun-02	D404	OVAL HILLII	1137.9	0.333
43	16-Jun-02	D303	OVAL HILLII	709.0	0.333
44	16-Jun-02	A304	BUTTERWORTH	532.1	0.250
45	18-Jun-02	E405	WHITE ROCKS	478.3	0.333

Haul Number	Date	Block Depth	Fishing Location	Total Catch (kg)	Effort (h)
46	18-Jun-02	E402	WHITE ROCKS	447.6	0.583
47	18-Jun-02	E406	WHITE ROCKS	640.1	0.333
48	18-Jun-02	E403	WHITE ROCKS	726.9	0.500
49	18-Jun-02	E404	WHITE ROCKS	300.7	0.250
50	18-Jun-02	E407	WHITE ROCKS	817.9	0.333
51	18-Jun-02	F403	WHITE ROCKS	360.2	0.333
52	18-Jun-02	F403	WHITE ROCKS	264.5	0.333
53	19-Jun-02	F404	WHITE ROCKS	634.8	0.333
54	19-Jun-02	F302	UNKNOWN	575.1	0.333
55	19-Jun-02	F302	SHELL GROUND	276.7	0.433
56	19-Jun-02	F301	UNKNOWN	718.2	0.500
57	19-Jun-02	G201	LAWN POINT	296.1	0.333
58	19-Jun-02	F302	UNKNOWN	322.4	0.500
59	19-Jun-02	G405	BONILLA	328.7	0.333
60	19-Jun-02	F404	WHITE ROCKS		0.483
61	20-Jun-02	F404	WHITE ROCKS	559.1	0.333
62	20-Jun-02	G406	BONILLA	229.2	0.283
63	20-Jun-02	G301	UNKNOWN	138.0	0.517
64	20-Jun-02	G407	SOUTH BONILLA	446.0	0.467
65	20-Jun-02	G302	SOUTH BONILLA	531.8	0.500
66	20-Jun-02	G304	SOUTH BONILLA	818.4	0.283
67	20-Jun-02	H201	SOUTH BONILLA	365.8	0.400
68	20-Jun-02	H301	OLE SPOT		0.000
69	21-Jun-02	H201	OLE SPOT	66.9	0.450
70	21-Jun-02	H302	OLE SPOT	205.5	0.500
71	21-Jun-02	H301	OLE SPOT	178.3	0.500
72	21-Jun-02	H302	OLE SPOT	117.9	0.500
73	21-Jun-02	H303	UNKNOWN	907.2	0.500
74	21-Jun-02	H405	SOUTH BONILLA	207.2	0.250
75	21-Jun-02	H405	SOUTH BONILLA	243.6	0.500
76	21-Jun-02	H406	UNKNOWN	217.9	0.383
77	22-Jun-02	J205	REEF ISLAND	285.9	0.400
78	22-Jun-02	J202	REEF ISLAND	437.4	0.533
79	22-Jun-02	I301	FLATS	274.7	0.500
80	22-Jun-02	I302	OLE SPOT	294.0	0.467
81	26-Jun-02	I404	UNKNOWN	365.5	0.250
82	26-Jun-02	I403	FLATS	332.1	0.283
83	26-Jun-02	I401	FLATS	128.9	0.250
84	26-Jun-02	J301	FLATS	22.2	0.267
85	26-Jun-02	J402	EAST HORSESHOE	56.2	0.333
86	26-Jun-02	J403	WEST HORSESHOE	28.2	0.250
87	26-Jun-02	J406	EAST HORSESHOE	90.8	0.250
88	26-Jun-02	I406	EAST HORSESHOE	161.0	0.250
89	26-Jun-02	J504	EAST HORSESHOE	138.0	0.367
90	26-Jun-02	J504	EAST HORSESHOE	130.8	0.250
91	26-Jun-02	J505	EAST HORSESHOE	110.0	0.250
92	26-Jun-02	K403	UNKNOWN	113.5	0.333

Haul Number	Date	Block Depth	Fishing Location	Total Catch (kg)	Effort (h)
93	26-Jun-02	K403	UNKNOWN	203.2	0.333
94	26-Jun-02	K403	UNKNOWN	92.0	0.333
95	26-Jun-02	K404	UNKNOWN	72.5	0.167
96	26-Jun-02	K405	UNKNOWN	67.1	0.333

Table 2. Catch by species and frequency of occurrence of species captured during the Hecate Strait multispecies survey on the *F/V Viking Storm*, June 10 - 28, 2002.

No.	Species Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency of occurrence
Flatfish							
1	Arrowtooth flounder	602	<i>Atheresthes stomias</i>	12,041.94	21.61	73	76.04
2	English sole	628	<i>Pleuronectes vetulus</i>	6,326.62	11.36	88	91.67
3	Dover sole	626	<i>Microstomus pacificus</i>	5,468.78	9.82	61	63.54
4	Rex sole	610	<i>Errex zachirus</i>	5,340.02	9.59	67	69.79
5	Rock sole	621	<i>Pleuronectes bilineatus</i>	1,586.10	2.85	66	68.75
6	Pacific sanddab	596	<i>Citharichthys sordidus</i>	1,290.40	2.32	45	46.88
7	Pacific halibut	614	<i>Hippoglossus stenolepis</i>	1,001.30	1.80	69	71.88
8	Flathead sole	612	<i>Hippoglossoides elassodon</i>	849.40	1.52	47	48.96
9	Sand sole	636	<i>Psettichthys melanostictus</i>	424.75	0.76	56	58.33
10	Petrale sole	607	<i>Eopsetta jordani</i>	277.78	0.50	47	48.96
11	Butter sole	619	<i>Pleuronectes isolepis</i>	94.70	0.17	30	31.25
12	Starry flounder	631	<i>Platichthys stellatus</i>	68.80	0.12	9	9.38
13	Slender sole	625	<i>Eopsetta exilis</i>	59.10	0.11	24	25.00
14	Curlfin sole	635	<i>Pleuronichthys decurrens</i>	32.00	0.06	28	29.17
15	Speckled sanddab	598	<i>Citharichthys stigmaeus</i>	1.10	0.00	11	11.46
16	C-o sole	633	<i>Pleuronichthys coenosus</i>	0.10	0.00	1	1.04
Total Flatfish				34,862.89	62.58		
Roundfish							
1	Pacific cod	222	<i>Gadus macrocephalus</i>	2,310.64	4.15	78	81.25
2	Walleye pollock	228	<i>Theragra chalcogramma</i>	1,764.50	3.17	56	58.33
3	Sablefish	455	<i>Anoplopoma fimbria</i>	910.81	1.63	43	44.79
4	Pacific tomcod	226	<i>Microgadus proximus</i>	694.41	1.25	56	58.33
5	Lingcod	467	<i>Ophiodon elongatus</i>	379.20	0.68	31	32.30
6	Pacific herring	096	<i>Clupea pallasii</i>	139.62	0.25	46	47.92
7	Eulachon	148	<i>Thaleichthys pacificus</i>	61.80	0.11	19	19.79
8	Bigfin eelpout	233	<i>Lycodes corteziensis</i>	37.70	0.07	25	26.04
9	Pacific sand lance	361	<i>Ammodytes hexapterus</i>	37.10	0.07	34	35.42
10	Wolf eel	351	<i>Anarrhichthys ocellatus</i>	14.70	0.03	3	3.13
11	Sculpins	472	<i>Cottidae (family)</i>	14.50	0.03	14	14.58
12	Kelp greenling	461	<i>Hexagrammos decagrammus</i>	11.70	0.02	7	7.29
13	Sturgeon poacher	550	<i>Podathecus acipenserinus</i>	11.30	0.02	42	43.75
14	Pricklebacks	324	<i>Stichaeidae (family)</i>	7.10	0.01	14	14.58
15	Buffalo sculpin	499	<i>Enophrys bison</i>	3.00	0.01	1	1.04
16	Chinook salmon	124	<i>Oncorhynchus tshawytscha</i>	3.00	0.01	2	2.08
17	Northern ronquil	319	<i>Ronquilus jordani</i>	1.10	0.00	2	2.08
18	Roughback sculpin	491	<i>Chitonotus pugetensis</i>	0.90	0.00	5	5.21
19	Eelpouts	231	<i>Zoarcidae (family)</i>	0.80	0.00	4	4.17
20	Brown Irish Lord	504	<i>Hemilepidotus spinosus</i>	0.50	0.00	1	1.04
21	Snake pricklyback	337	<i>Lumpenus sagitta</i>	0.30	0.00	3	3.13
22	Poachers	546	<i>Agonidae (family)</i>	0.20	0.00	2	2.08
23	Wrymouths	354	<i>Cryptacanthodidae (family)</i>	0.10	0.00	1	1.04
24	Spotfin sculpin	513	<i>Icelinus tenuis</i>	0.10	0.00	1	1.04
25	Red irish lord	502	<i>Hemilepidotus hemilepidotus</i>	0.10	0.00	1	1.04

No.	Species	Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency occurrence
26	Northern spearnose poache		549	<i>Agonopsis vulsa</i>	0.10	0.00	1	1.04
27	Bluespotted poacher		567	<i>Xeneretmus triacanthus</i>	0.10	0.00	1	1.04
28	Shiner perch		304	<i>Cymatogaster aggregata</i>	0.10	0.00	1	1.04
Total Roundfish					6,405.38	11.50		
Rockfish								
1	Silvergray rockfish		405	<i>Sebastes brevispinis</i>	47.60	0.09	6	6.25
2	Quillback rockfish		424	<i>Sebastes maliger</i>	34.20	0.06	8	8.33
3	Bocaccio		435	<i>Sebastes paucispinis</i>	31.10	0.06	6	6.25
4	Yellowtail rockfish		418	<i>Sebastes flavidus</i>	27.60	0.05	7	7.29
5	Pacific ocean perch		396	<i>Sebastes alutus</i>	5.60	0.01	8	8.33
6	Copper rockfish		407	<i>Sebastes caurinus</i>	4.10	0.01	2	2.08
7	Shortspine thornyhead		451	<i>Sebastolobus alascanus</i>	2.80	0.01	2	2.08
8	Rougheye rockfish		394	<i>Sebastes aleutianus</i>	1.80	0.00	1	1.04
9	Canary rockfish		437	<i>Sebastes pinniger</i>	1.30	0.00	1	1.04
10	Yelloweye rockfish		442	<i>Sebastes ruberrimus</i>	0.60	0.00	1	1.04
11	Pygmy rockfish		448	<i>Sebastes wilsoni</i>	0.10	0.00	1	1.04
12	Black rockfish		426	<i>Sebastes melanops</i>	0.10	0.00	1	1.04
13	Widow rockfish		417	<i>Sebastes entomelas</i>	0.10	0.00	1	1.04
14	Greenstriped rockfish		414	<i>Sebastes elongatus</i>	0.10	0.00	1	1.04
Total Rockfish					157.10	0.28		
Selachii								
1	Spotted ratfish		066	<i>Hydrolagus collieri</i>	9,547.54	17.14	86	89.58
2	Spiny dogfish		044	<i>Squalus acanthias</i>	2,704.01	4.85	75	78.13
3	Big skate		056	<i>Raja binoculata</i>	741.83	1.33	33	34.38
4	Longnose skate		059	<i>Raja rhina</i>	61.48	0.11	11	11.46
5	Sandpaper skate		058	<i>Bathyraja interrupta</i>	9.90	0.02	5	5.21
Total Selachii					13,064.76	23.45		
TOTAL FISH					54,489.73	97.81		
Invertebrates								
1	Pink short-spined star		4ZC	<i>Pisaster brevispinis</i>	319.08	0.57	52	54.17
2	Dungeness crab		XKG	<i>Cancer magister</i>	242.19	0.43	11	11.46
3	Sea cucumbers		6NA	<i>Holothuroidea (class)</i>	177.40	0.32	11	11.46
4	Sunflower starfish		4XE	<i>Pycnopodia helianthoides</i>	128.08	0.23	44	45.83
5	Anemone		3LO	<i>Actinaria (order)</i>	68.98	0.12	26	27.08
6	Jellyfish		3GO	<i>Scyphozoa (class)</i>	65.50	0.12	43	44.79
7	Metridium spp		3M8	<i>Metridium spp</i>	37.20	0.07	4	4.17
8	Sea pens		3UO	<i>Pennatulacea (order)</i>	29.80	0.05	22	22.92
9	Sidestripe shrimp		SEE	<i>Pandalopsis dispar</i>	19.30	0.03	7	7.29
10	Barnacles		HCA	<i>Cirripedia (subclass)</i>	17.70	0.03	4	4.17
11	Sponges		2AO	<i>Phylum porifera</i>	16.12	0.03	9	9.38
12	Oregontriton		28I	<i>Fusitriton oregonensis</i>	11.52	0.02	17	17.71
13	Pagurus spp		VBB	<i>Pagurus spp</i>	10.22	0.02	28	29.17
14	Giant red sea cucumber		6OB	<i>Parastichopus californicus</i>	8.80	0.02	1	1.04
15	Echinoidea(class)		6AA	<i>Echinoidea (class)</i>	7.90	0.01	5	5.21
16	Purple starfish		4ZA	<i>Pisaster ochraceus</i>	6.60	0.01	3	3.13
17	Hermit crab		VBF	<i>Pagurus brandti</i>	6.40	0.01	12	12.50
18	Kelp crab		ZDE	<i>Pugettia gracilis</i>	5.72	0.01	2	2.08
19	Box crab		VMH	<i>Lopholithodes spp</i>	5.70	0.01	3	3.13
20	Giant Pacific Octopus		98E	<i>Octopus dofleini</i>	5.10	0.01	1	1.04

No.	Species	Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency occurrence
21	Pink shrimp		SDB	<i>Pandalus jordani</i>	3.50	0.01	5	5.21
22	Arminidae(family)		54B	<i>Arminidae (family)</i>	2.80	0.01	20	20.83
23	Red urchin		6BC	<i>Strongylocentrotus franciscanus</i>	2.70	0.00	1	1.04
24	Vermillion starfish		4JD	<i>Mediaster aequalis</i>	2.30	0.00	14	14.58
25	Purplehinged rockscallop		67J	<i>Crassadoma gigantea</i>	2.00	0.00	1	1.04
26	Spiny scallop		67C	<i>Chlamys hastata</i>	1.80	0.00	6	6.25
27	Cookie star		4JF	<i>Ceramaster patagonicus</i>	1.60	0.00	7	7.29
28	Decorator crab		ZCA	<i>Oregonia gracilis</i>	1.50	0.00	5	5.21
29	Opal squid		92D	<i>Loligo opalescens</i>	1.50	0.00	3	3.13
30	Starfish		4GA	<i>Asteriodes (subclass)</i>	1.30	0.00	4	4.17
31	Cancer gracilis		XKE	<i>Cancer gracilis</i>	1.00	0.00	6	6.25
32	Fish-eating star		4XF	<i>Stalasterias forreri</i>	1.00	0.00	1	1.04
33	Chlamys rubida		67E	<i>Chlamys rubida</i>	0.90	0.00	9	9.38
34	Cancer branneri		XKC	<i>Cancer branneri</i>	0.90	0.00	9	9.38
35	Lewismoon snail		27F	<i>Polinices lewisii</i>	0.70	0.00	7	7.29
36	Rock snails		31E	<i>Muricidae (family)</i>	0.70	0.00	3	3.13
37	Octopus		98D	<i>Octopus spp</i>	0.50	0.00	1	1.04
38	Sand star		4GD	<i>Luidia foliolata</i>	0.50	0.00	5	5.21
39	Leather star		4OC	<i>Dermasterias imbricata</i>	0.50	0.00	5	5.21
40	Cushion star		4UH	<i>Pteraster tessellatus</i>	0.40	0.00	4	4.17
41	Long-armed sea star		4YB	<i>Orthasterias koehleri</i>	0.40	0.00	4	4.17
42	Rose starfish		4TG	<i>Crossaster papposus</i>	0.40	0.00	4	4.17
43	Red rock crab		XLA	<i>Cancer productus</i>	0.40	0.00	4	4.17
44	Squid		92A	<i>Teuthoidea (order)</i>	0.30	0.00	3	3.13
45	Buccinidae(family)		33G	<i>Buccinidae (family)</i>	0.30	0.00	3	3.13
46	Ascidians and Tunicates		8AB	<i>Asciacea (class)</i>	0.30	0.00	3	3.13
47	Morning sun starfish		4TB	<i>Solaster dawsoni</i>	0.20	0.00	2	2.08
48	Humpback shrimp		SCJ	<i>Pandalus hypsinotus</i>	0.20	0.00	2	2.08
49	Boringnaticids		27C	<i>Naticidae (family)</i>	0.20	0.00	2	2.08
50	Myidae(family)		83E	<i>Myidae (family)</i>	0.20	0.00	2	2.08
51	Blood star		4RA	<i>Henericia leviuscula annectens</i>	0.20	0.00	2	2.08
52	Basket stars		5QA	<i>Euryalae (order)</i>	0.20	0.00	2	2.08
53	Cardiidae(family)		75A	<i>Cardiidae (family)</i>	0.20	0.00	2	2.08
54	Sea mouse		OAE	<i>Aphrodita spp</i>	0.20	0.00	2	2.08
55	Solasteridae(family)		4TA	<i>Solasteridae (family)</i>	0.10	0.00	1	1.04
56	Tube worms		OFA	<i>Sedentaria (subclass)</i>	0.10	0.00	1	1.04
57	Chitons		O2C	<i>Polyplacophora (subclass)</i>	0.10	0.00	1	1.04
58	Phyllolithodes papillosus		VPA	<i>Phyllolithodes papillosus</i>	0.10	0.00	1	1.04
59	Scallop		67B	<i>Pectinidae (family)</i>	0.10	0.00	1	1.04
60	Weatherwane scallop		68A	<i>Pateinopecten caurinus</i>	0.10	0.00	1	1.04
61	Pasp		ESI	<i>Parastenhelia spinosa</i>	0.10	0.00	1	1.04
62	Hermit crabs		VAC	<i>Paguridae (family)</i>	0.10	0.00	1	1.04
63	Sea whip		3U2	<i>Osteocella septentrionalis</i>	0.10	0.00	1	1.04
64	Ophiuroidea(class)		5AA	<i>Ophiuroidea (class)</i>	0.10	0.00	1	1.04
65	Seaslugs		51A	<i>Nudibranchiata (suborder)</i>	0.10	0.00	1	1.04
66	Molluscs		OOA	<i>Mollusca (phylum)</i>	0.10	0.00	1	1.04
67	Macoma spp		77C	<i>Macoma spp</i>	0.10	0.00	1	1.04
68	Green urchin		6BB	<i>Strongylocentrotus droebachiensis</i>	0.10	0.00	1	1.04
69	Flatworms		4AO	<i>Flatworms</i>	0.10	0.00	1	1.04

No.	Species	Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency occurrence
70	Symmetrical sessil barnacles	HNA		<i>Balanomorpha (suborder)</i>	0.10	0.00	1	1.04
71	Anthozoa(class)	3JO		<i>Anthozoa (class)</i>	0.10	0.00	1	1.04
	Total Invertebrates				1,222.81	2.19		
	TOTAL CATCH				55,774.24	100.00		

Table 3. Summary of biological samples collected during the Hecate Strait multispecies survey on the *F/V Viking Storm*, June 10 - 28, 2002.

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples			Sample Collected			
					Male	Female	Unknown	Total	(a)	Type	Preserved
11-Jun-02	Arrowtooth Flounder	6020001-095	5	602-1	14	81	0	95	LWSM	otoliths	
12-Jun-02	Arrowtooth Flounder	6020096-195	11	602-1	28	72	0	100	LWSM	otoliths	
	Arrowtooth Flounder			TOTAL	42	153	0	195			
11-Jun-02	Dover Sole	6260001-046	2	626-1	13	32	0	45	LWSM	otoliths	
11-Jun-02	Dover Sole	6260046-100	4	626-1	32	23	0	55	LWSM	otoliths	
12-Jun-02	Dover Sole	6260101-200	13	626-2	65	35	0	100	LWSM	otoliths	
14-Jun-02	Dover Sole	6260201-300	22	626-3	30	70	0	100	LWSM	otoliths	
18-Jun-02	Dover Sole	6260301-373	47	626-4	30	43	0	73	LWSM	otoliths	
18-Jun-02	Dover Sole	6260374-400	50	626-4	7	20	0	27	LWSM	otoliths	
19-Jun-02	Dover Sole	6260401-500	53	626-5	72	28	0	100	LWSM	otoliths	frozen
13-Jun-02	Dover Sole	6260501-564	16	626-6	37	25	2	64	LWSM	otoliths	frozen
13-Jun-02	Dover Sole	6260645-669	16	626-7	15	10	0	25	LWSM	otoliths	frozen
16-Jun-02	Dover Sole	6260565-600	44	626-6	13	23	0	36	LWSM	otoliths	frozen
16-Jun-02	Dover Sole	6260601-644	43	626-7	6	18	20	44	LWSM	otoliths	frozen
	Dover Sole			TOTAL	320	327	22	669			
13-Jun-02	Flathead Sole	6120001-048	15	612-1	33	15	0	48	LWSM	otoliths	
15-Jun-02	Flathead Sole	6120049-148	37	612-2	25	75	0	100	LWSM	otoliths	frozen
12-Jun-02	Flathead Sole	6120149-156	37	612-3	2	6	0	8	LWSM	otoliths	frozen
12-Jun-02	Flathead Sole	6120157-172	14	612-3	1	15	0	16	LWSM	otoliths	frozen
	Flathead Sole			TOTAL	61	111	0	172			
11-Jun-02	English Sole	6280001-100	3	628-1	35	65	0	100	LWSM	otoliths	
12-Jun-02	English Sole	6280101-200	12	628-2	8	92	0	100	LWSM	otoliths	
13-Jun-02	English Sole	6280201-300	19	628-3	58	42	0	100	LWSM	otoliths	
19-Jun-02	English Sole	6280301-400	55	628-4	36	64	0	100	LWSM	otoliths	
20-Jun-02	English Sole	6280401-500	61	628-5	45	55	0	100	LWSM	otoliths	
26-Jun-02	English Sole	6280501-600	81	628-6	38	62	0	100	LWSM	otoliths	
	English Sole			TOTAL	220	380	0	600			

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples				Sample Collected	
					Male	Female	Unknown	Total	(a)	Type
14-Jun-02	Rock Sole	6210001-099	24	621-1	31	68	0	99	LWSM	otoliths
15-Jun-02	Rock Sole	6210100-199	30	621-2	41	59	0	100	LWSM	otoliths
15-Jun-02	Rock Sole	6210200-299	35	621-3	30	69	1	100	LWSM	otoliths
19-Jun-02	Rock Sole	6210301-332	54	621-4	14	18	0	32	LWSM	otoliths
19-Jun-02	Rock Sole	6210333-400	55	621-4	25	43	0	68	LWSM	otoliths
20-Jun-02	Rock Sole	6210401-500	63	621-5	82	18	0	100	LWSM	otoliths
22-Jun-02	Rock Sole	6210501-508	77	621-6	0	8	0	8	LWSM	otoliths
22-Jun-02	Rock Sole	6210509-559	78	621-6	21	30	0	51	LWSM	otoliths
22-Jun-02	Rock Sole	6210560-600	79	621-6	15	26	0	41	LWSM	otoliths
26-Jun-02	Rock Sole	6210601-657	83	621-7	11	46	0	57	LWSM	otoliths
26-Jun-02	Rock Sole	6210658-672	84	621-7	8	7	0	15	LWSM	otoliths
26-Jun-02	Rock Sole	6210683-700	85	621-7	10	18	0	28	LWSM	otoliths
26-Jun-02	Rock Sole	6210701-800	89	621-8	16	84	0	100	LWSM	otoliths
16-Jun-02	Rock Sole	6210801-902	31	621-9	11	27	61	99	LWSM	otoliths
15-Jun-02	Rock Sole	621903-932	31	621-10	3	3	26	32	LWSM	otoliths
15-Jun-02	Rock Sole	621933	30	621-11	1	0	0	1	LWSM	otoliths
	Rock Sole			TOTAL	319	524	88	931		
11-Jun-02	Petrale Sole	6070001-014	1	607-1	6	8	0	14	LWSM	otoliths
11-Jun-02	Petrale Sole	6070015-023	2	607-1	2	7	0	9	LWSM	otoliths
11-Jun-02	Petrale Sole	6070024	3	607-1	1	0	0	1	LWSM	otoliths
11-Jun-02	Petrale Sole	6070025-029	5	607-1	3	2	0	5	LWSM	otoliths
11-Jun-02	Petrale Sole	6070030-041	6	607-1	6	6	0	12	LWSM	otoliths
11-Jun-02	Petrale Sole	6070042	4	607-1	0	1	0	1	LWSM	otoliths
13-Jun-02	Petrale Sole	6070044-045	15	607-1	0	2	0	2	LWSM	otoliths
13-Jun-02	Petrale Sole	6070046-050	20	607-1	0	5	0	5	LWSM	otoliths
14-Jun-02	Petrale Sole	6070051-055	26	607-1	1	4	0	5	LWSM	otoliths
15-Jun-02	Petrale Sole	6070056-057	29	607-1	1	1	0	2	LWSM	otoliths
16-Jun-02	Petrale Sole	6070058	42	607-1	1	0	0	1	LWSM	otoliths
16-Jun-02	Petrale Sole	6070059	44	607-1	1	0	0	1	LWSM	otoliths
18-Jun-02	Petrale Sole	6070060-068	45	607-2	7	2	0	9	LWSM	otoliths
18-Jun-02	Petrale Sole	6070069-071	46	607-2	0	3	0	3	LWSM	otoliths
18-Jun-02	Petrale Sole	6070072-074	47	607-2	3	0	0	3	LWSM	otoliths

frozen
frozen
frozen

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples				Sample Collected		
					Male	Female	Unknown	Total	(a)	Type	Preserved
18-Jun-02	Petrale Sole	6070075-078	48	607-2	2	2	0	4	LWSM	otoliths	
18-Jun-02	Petrale Sole	6070079-081	50	607-2	3	0	0	3	LWSM	otoliths	
18-Jun-02	Petrale Sole	6070082-083	52	607-2	1	1	0	2	LWSM	otoliths	
19-Jun-02	Petrale Sole	6070084-093	53	607-2	8	2	0	10	LWSM	otoliths	
19-Jun-02	Petrale Sole	6070094-096	54	607-2	3	0	0	3	LWSM	otoliths	
19-Jun-02	Petrale Sole	6070097-099	59	607-2	2	1	0	3	LWSM	otoliths	
20-Jun-02	Petrale Sole	60700100-104	61	607-2	3	2	0	5	LWSM	otoliths	
20-Jun-02	Petrale Sole	6070105	64	607-2	1	0	0	1	LWSM	otoliths	
20-Jun-02	Petrale Sole	6070106-118	66	607-2	2	11	0	13	LWSM	otoliths	
20-Jun-02	Petrale Sole	6070119-121	67	607-2	0	3	0	3	LWSM	otoliths	
20-Jun-02	Petrale Sole	6070122-159	73	607-2	0	38	0	38	LWSM	otoliths	
21-Jun-02	Petrale Sole	6070122-195	73	607-3	11	25	0	36	LWSM	otoliths	
21-Jun-02	Petrale Sole	6070198-199	74	607-3	0	4	0	4	LWSM	otoliths	
21-Jun-02	Petrale Sole	6070200	76	607-3	0	1	0	1	LWSM	otoliths	
22-Jun-02	Petrale Sole	6070201-205	77	607-3	3	2	0	5	LWSM	otoliths	
22-Jun-02	Petrale Sole	6070206	78	607-3	0	1	0	1	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070207-216	81	607-3	4	6	0	10	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070217-232	82	607-3	7	9	0	16	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070223	83	607-3	0	1	0	1	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070234-236	82	607-3	2	1	0	3	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070237-248	87	607-3	1	11	0	12	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070249-252	88	607-3	1	3	0	4	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070253	90	607-3	0	1	0	1	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070254	89	607-3	0	1	0	1	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070255-260	90	607-3	0	6	0	6	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070261-300	90	607-4	3	37	0	40	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070301-311	91	607-4	2	9	0	11	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070312-323	92	607-4	0	12	0	12	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070324	93	607-4	0	1	0	1	LWSM	otoliths	
26-Jun-02	Petrale Sole	6070325-329	96	607-4	3	2	0	5	LWSM	otoliths	
18-Jun-02	Petrale Sole	6070350-370	43	607-5	8	13	0	21	LWSM	otoliths	frozen
15-Jun-02	Petrale Sole	6070371	38	607-5	0	1	0	1	LWSM	otoliths	frozen
12-Jun-02	Petrale Sole	6070372-380	14	607-5	7	2	0	9	LWSM	otoliths	frozen
TOTAL					109	250	0	359			

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples			Sample Collected			
					Male	Female	Unknown	Total	(a)	Type	Preserved
11-Jun-02	Rex Sole	6100001-100	3	610-1	26	74	0	100	LWSM	otoliths	
18-Jun-02	Rex Sole	6100101-200	47	610-2	31	68	1	100	LWSM	otoliths	
	Rex Sole			TOTAL	57	142	1	200			
14-Jun-02	Starry Flounder	6310001-010	24	631-1	1	9	0	10	LWSM	otoliths	
14-Jun-02	Starry Flounder	6310011	26	631-1	0	1	0	1	LWSM	otoliths	
19-Jun-02	Starry Flounder	6310012-015	57	631-1	1	3	0	4	LWSM	otoliths	
20-Jun-02	Starry Flounder	6310016	63	631-1	0	1	0	1	LWSM	otoliths	
14-Jun-02	Starry Flounder	6310017	24	631-1	0	1	0	1	LWSM	otoliths	frozen
	Starry Flounder			TOTAL	2	15	0	17			
26-Jun-02	Curfin Sole	6350001	96	635-1	0	1	0	1	LWSM	otoliths	frozen
26-Jun-02	Curfin Sole	3530002	85	635-1	0	1	0	1	LWSM	otoliths	frozen
19-Jun-02	Curfin Sole	6350003	55	635-1	0	1	0	1	LWSM	otoliths	frozen
22-Jun-02	Curfin Sole	6350004	78	635-1	0	1	0	1	LWSM	otoliths	frozen
26-Jun-02	Curfin Sole	6350005-007	82	635-1	3	0	0	3	LWSM	otoliths	frozen
20-Jun-02	Curfin Sole	6350008-009	67	635-1	2	0	0	2	LWSM	otoliths	frozen
20-Jun-02	Curfin Sole	6350010-011	65	635-1	2	0	0	2	LWSM	otoliths	frozen
26-Jun-02	Curfin Sole	6350012-025	92	635-1	7	7	0	14	LWSM	otoliths	frozen
26-Jun-02	Curfin Sole	6350026	83	635-1	1	0	0	1	LWSM	otoliths	frozen
18-Jun-02	Curfin Sole	6350027-031	52	635-1	5	0	0	5	LWSM	otoliths	frozen
26-Jun-02	Curfin Sole	6350032	94	635-1	0	1	0	1	LWSM	otoliths	frozen
22-Jun-02	Curfin Sole	6350033-042	80	635-1	3	7	0	10	LWSM	otoliths	frozen
21-Jun-02	Curfin Sole	6350043-054	70	635-1	5	7	0	12	LWSM	otoliths	frozen
21-Jun-02	Curfin Sole	6350055-060	69	635-1	3	3	0	6	LWSM	otoliths	frozen
18-Jun-02	Curfin Sole	6350061-065	46	635-2	3	2	0	5	LWSM	otoliths	frozen
20-Jun-02	Curfin Sole	6350066-067	71	635-2	0	1	0	1	LWSM	otoliths	frozen
19-Jun-02	Curfin Sole	6360068	54	635-2	1		0	1	LWSM	otoliths	frozen
22-Jun-02	Curfin Sole	6360069-70	79	635-2	1	1	0	2	LWSM	otoliths	frozen
22-Jun-02	Curfin Sole	6360071-75	77	635-2	1	4	0	5	LWSM	otoliths	frozen
	Curfin Sole			TOTAL	37	37	0	74			
15-Jun-02	Butter Sole	6190001	30	619-1	36	64	0	100	LWSM	otoliths	frozen

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples				Sample Collected		
					Male	Female	Unknown	Total	(a)	Type	Preserved
	Butter Sole			TOTAL	36	64	0	100			
14-Jun-02	Sand Sole	6360001-125	25	636-1/2	55	70	0	125	LWSM	otoliths	frozen
16-Jun-02	Sand Sole	6360126-221	43	636-2/3	47	49	0	96	LWSM	otoliths	frozen
15-Jun-02	Sand Sole	6360222-357	30	636-3/4	51	85	0	136	LWSM	otoliths	frozen
	Sand Sole			TOTAL	153	204	0	357			
15-Jun-02	Pacific Sandab	5960001-046	37	596-1	20	26	0	46	LWSM	otoliths	frozen
16-Jun-02	Pacific Sandab	5960047-073	41	596-1	16	10	1	27	LWSM	otoliths	frozen
	Pacific Sandab			TOTAL	36	36	1	73			
18-Jun-02	Slender Sole	6250001-093	47	625-1	57	36	0	93	LWSM	otoliths	
16-Jun-02	Slender Sole	6250094-117	41	625-2	0	24	0	24	LWSM	otoliths	frozen
	Slender Sole			TOTAL	57	60	0	117			
11-Jun-02	Big Skate	0560001	2		1	0	0	1	LWSM	backbones, stomachs	wingspan
11-Jun-02	Big Skate	0560002	3		1	0	0	1	LWSM	backbones, stomachs	wingspan
11-Jun-02	Big Skate	0560003-004	6		1	1	0	2	LWSM	backbones, stomachs	wingspan
12-Jun-02	Big Skate	0560005-006	7		1	1	0	2	LWSM	backbones, stomachs	wingspan
12-Jun-02	Big Skate	0560008-009	8		3	0	0	3	LWSM	backbones, stomachs	wingspan
12-Jun-02	Big Skate	0560010	9		0	1	0	1	LWSM	backbones, stomachs	wingspan
12-Jun-02	Big Skate	0560011-012	11		0	2	0	2	LWSM	backbones, stomachs	wingspan
13-Jun-02	Big Skate	0560013-14	16		1	1	0	2	LWSM	backbones, stomachs	wingspan
13-Jun-02	Big Skate	0560015	17		0	1	0	1	LWSM	backbones, stomachs	wingspan
13-Jun-02	Big Skate	0560016-018	21		2	1	0	3	LWSM	backbones, stomachs	wingspan
14-Jun-02	Big Skate	0560019	23		0	1	0	1	LWSM	backbones, stomachs	wingspan
14-Jun-02	Big Skate	0560020-028	24		4	5	0	9	LWSM	backbones, stomachs	wingspan
14-Jun-02	Big Skate	0560028-031	25		2	1	0	3	LWSM	backbones, stomachs	wingspan
14-Jun-02	Big Skate	0560032-034	26		3	0	0	3	LWSM	backbones, stomachs	wingspan
14-Jun-02	Big Skate	0560035	27		0	1	0	1	LWSM	backbones, stomachs	wingspan
15-Jun-02	Big Skate	0560036-039	30		2	2	0	4	LWSM	backbones, stomachs	wingspan
15-Jun-02	Big Skate	0560040-041	31		2	0	0	2	LWSM	backbones, stomachs	wingspan
15-Jun-02	Big Skate	0560045	35		1	0	0	1	LWSM	backbones, stomachs	wingspan
15-Jun-02	Big Skate	0560046	36		1	0	0	1	LWSM	backbones, stomachs	wingspan

(a) L-length, W-weight, S-sex, M-maturity

Species		Number of Samples					Sample Collected	
		Tow No.	Tray No.	Male	Female	Unknown	Total	(a) Type Preserved
Catch Date	Common Name	Fish No.						
16-Jun-02	Big Skate	0560047-048	38	0	2	0	2	LWSM backbones, stomachs wingspan
16-Jun-02	Big Skate	0560049-050	39	1	1	0	2	LWSM backbones, stomachs wingspan
18-Jun-02	Big Skate	0560051	46	1	0	0	1	LWSM backbones, stomachs wingspan
19-Jun-02	Big Skate	0560052-056	55	4	1	0	5	LWSM backbones, stomachs wingspan
19-Jun-02	Big Skate	0560057-063	58	5	2	0	7	LWSM backbones, stomachs wingspan
20-Jun-02	Big Skate	056064	63	0	1	0	1	LWSM backbones, stomachs wingspan
20-Jun-02	Big Skate	056065	65	1	0	0	1	LWSM backbones, stomachs wingspan
21-Jun-02	Big Skate	0560066-068	70	2	1	0	3	LWSM backbones, stomachs wingspan
21-Jun-02	Big Skate	0560069-080	71	3	9	0	12	LWSM backbones, stomachs wingspan
21-Jun-02	Big Skate	0560081-082	72	0	2	0	2	LWSM backbones, stomachs wingspan
21-Jun-02	Big Skate	0590083	76	1	0	0	1	LWSM backbones, stomachs wingspan
22-Jun-02	Big Skate	0560084-090	79	2	5	0	7	LWSM backbones, stomachs wingspan
26-Jun-02	Big Skate	0560091	86	1	0	0	1	LWSM backbones, stomachs wingspan
26-Jun-02	Big Skate	0560092	93	0	1	0	1	LWSM backbones, stomachs wingspan
	Big Skate		TOTAL	46	43	0	89	
11-Jun-02	Longnose Skate	0590001	5	1	0	0	1	LWSM backbones, stomachs wingspan
11-Jun-02	Longnose Skate	0590002	6	0	1	0	1	LWSM backbones, stomachs wingspan
13-Jun-02	Longnose Skate	0590003-004	15	1	1	0	2	LWSM backbones, stomachs wingspan
13-Jun-02	Longnose Skate	0590005-006	17	1	1	0	2	LWSM backbones, stomachs wingspan
14-Jun-02	Longnose Skate	0590007-008	26	2	0	0	2	LWSM backbones, stomachs wingspan
15-Jun-02	Longnose Skate	0590009-010	38	0	2	0	2	LWSM backbones, stomachs wingspan
18-Jun-02	Longnose Skate	0590011-013	45	2	1	0	3	LWSM backbones, stomachs wingspan
18-Jun-02	Longnose Skate	0590014	46	1	0	0	1	LWSM backbones, stomachs wingspan
18-Jun-02	Longnose Skate	0590015	50	1	0	0	1	LWSM backbones, stomachs wingspan
21-Jun-02	Longnose Skate	0590016	75	0	1	0	1	LWSM backbones, stomachs wingspan
22-Jun-02	Longnose Skate	0590017-018	78	1	1	0	2	LWSM backbones, stomachs wingspan
	Longnose Skate		TOTAL	10	8	0	18	
13-Jun-02	Sandpaper Skate	0580003	15	1	0	0	1	LWSM wingspan
13-Jun-02	Sandpaper Skate	0580004-005	16	2	0	0	2	LWSM wingspan
13-Jun-02	Sandpaper Skate	0580006	17	1	0	0	1	LWSM wingspan
13-Jun-02	Sandpaper Skate	0580007	19	0	0	1	1	LWSM wingspan
	Sandpaper Skate		TOTAL	4	0	1	5	

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples				Sample Collected		
					Male	Female	Unknown	Total	(a)	Type	Preserved
13-Jun-02	Walleye Pollock	2280001-100	15	228-1	33	67	0	100	LWSM	otoliths, lt. pectoral fin	
14-Jun-02	Walleye Pollock	2280101-116	23	228-2	1	15	0	16	LWSM	otoliths, lt. pectoral fin	
15-Jun-02	Walleye Pollock	2280117-163	29	228-2	13	34	0	47	LWSM	otoliths, lt. pectoral fin	
12-Jun-02	Walleye Pollock	2280164-173	13	228-3	3	7	0	10	LWSM	otoliths, lt. pectoral fin	frozen
15-Jun-02	Walleye Pollock	2280174-207	33	228-3	11	23	0	34	LWSM	otoliths, lt. pectoral fin	frozen
	Walleye Pollock			TOTAL	61	146	0	207			
13-Jun-01	Sablefish	455001-18	16	455-1	11	7	0	18	LWSM	otoliths, lt. pectoral fin	frozen
16-Jun-02	Sablefish	455019-34	42	455-1	7	9	0	16	LWSM	otoliths, lt. pectoral fin	frozen
16-Jun-02	Sablefish	455035-59	41	455-1	15	10	0	25	LWSM	otoliths, lt. pectoral fin	frozen
16-Jun-02	Sablefish	455060-77	42	455-1	6	11	1	18	LWSM	otoliths, lt. pectoral fin	frozen
12-Jun-02	Sablefish	455078-100	13	455-1	13	10	0	23	LWSM	otoliths, lt. pectoral fin	frozen
16-Jun-02	Sablefish	455101-125	41	455-2	13	12	0	25	LWSM	otoliths, lt. pectoral fin	frozen
13-Jun-02	Sablefish	455126-140	16	455-2	3	12	0	15	LWSM	otoliths, lt. pectoral fin	frozen
12-Jun-02	Sablefish	455141-155	13	455-2	8	7	0	15	LWSM	otoliths, lt. pectoral fin	frozen
15-Jun-02	Sablefish	455156-167	16	455-2	1	11	0	12	LWSM	otoliths, lt. pectoral fin	frozen
13-Jun-02	Sablefish	453168-181	13	455-2	5	9	0	14	LWSM	otoliths, lt. pectoral fin	frozen
13-Jun-02	Sablefish	455182-199	15	455-2	11	7	0	18	LWSM	otoliths, lt. pectoral fin	frozen
	Sablefish			TOTAL	93	105	1	199			
11-Jun-02	Pacific Cod	2220001-3	2		1	2	0	3	LWSM		
11-Jun-02	Pacific Cod	2220004-12	3		4	5	0	9	LWSM		
11-Jun-02	Pacific Cod	2220013-18	4		2	4	0	6	LWSM		
11-Jun-02	Pacific Cod	2220019-22	5		2	2	0	4	LWSM		
11-Jun-02	Pacific Cod	2220023-31	1		5	4	0	9	LWSM		
12-Jun-02	Pacific Cod	2220032-47	6		7	9	0	16	LWSM		
12-Jun-02	Pacific Cod	2220048	7		1	0	0	1	LWSM		
12-Jun-02	Pacific Cod	2220048-169	9		67	53	1	121	LWSM		
12-Jun-02	Pacific Cod	2220170-171	10		0	2	0	2	LWSM		
12-Jun-02	Pacific Cod	2220172-191	11		10	10	0	20	LWSM		
12-Jun-02	Pacific Cod	2220192-203	12		8	4	0	12	LWSM		
12-Jun-02	Pacific Cod	2220204-224	13		7	14	0	21	LWSM		
12-Jun-02	Pacific Cod	2220225-237	14		7	5	0	12	LWSM		

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Number of Samples		Sample Collected	
							Unknown	Total	(a)	Type
13-Jun-02	Pacific Cod	2220238-261	15		11	13	0	24	LWSM	
13-Jun-02	Pacific Cod	2220262-268	16		5	2	0	7	LWSM	
13-Jun-02	Pacific Cod	2220269-316	17		23	24	1	48	LWSM	
13-Jun-02	Pacific Cod	2220317-329	18		11	12	0	23	LWSM	
13-Jun-02	Pacific Cod	2220340-375	19		17	19	0	36	LWSM	
14-Jun-02	Pacific Cod	2220376-388	22		5	8	0	13	LWSM	
14-Jun-02	Pacific Cod	2220389-411	23		11	12	0	23	LWSM	
14-Jun-02	Pacific Cod	2220412-425	25		4	10	0	14	LWSM	
14-Jun-02	Pacific Cod	2220426-430	24		2	3	0	5	LWSM	
14-Jun-02	Pacific Cod	2220431-458	26		21	7	0	28	LWSM	
14-Jun-02	Pacific Cod	2220459-485	27		17	9	0	26	LWSM	
14-Jun-02	Pacific Cod	2220486-487	28		1	1	0	2	LWSM	
15-Jun-02	Pacific Cod	2220488-502	29		3	12	0	15	LWSM	
15-Jun-02	Pacific Cod	2220503-517	30		8	7	0	15	LWSM	
15-Jun-02	Pacific Cod	2220518-530	31		6	7	0	13	LWSM	
15-Jun-02	Pacific Cod	2220531-648	32		59	59	0	118	LWSM	
15-Jun-02	Pacific Cod	2220649-819	33		41	40	0	81	LWSM	19 stomachs examined
15-Jun-02	Pacific Cod	2220820-825	34		4	2	0	6	LWSM	5 stomachs
15-Jun-02	Pacific Cod	2220826-843	35		9	8	0	17	LWSM	
15-Jun-02	Pacific Cod	2220843-845	36		1	2	0	3	LWSM	
15-Jun-02	Pacific Cod	2220846-853	37		2	6	0	8	LWSM	
16-Jun-02	Pacific Cod	2220854-870	38		6	11	0	17	LWSM	
16-Jun-02	Pacific Cod	2220871-875	39		2	3	0	5	LWSM	
16-Jun-02	Pacific Cod	2220876-884	40		5	4	0	9	LWSM	
16-Jun-02	Pacific Cod	2220885-890	41		2	4	0	6	LWSM	
16-Jun-02	Pacific Cod	2220891-906	42		7	9	0	16	LWSM	
16-Jun-02	Pacific Cod	2220907-918	43		6	6	0	12	LWSM	
16-Jun-02	Pacific Cod	2220919-922	44		2	2	0	4	LWSM	
18-Jun-02	Pacific Cod	2220923-928	45		3	3	0	6	LWSM	
18-Jun-02	Pacific Cod	2220929-1075	46		82	65	0	147	LWSM	9 stomachs examined
18-Jun-02	Pacific Cod	2221076-1082	47		1	6	0	7	LWSM	33 stomachs
18-Jun-02	Pacific Cod	2221083-1095	48		6	7	0	13	LWSM	
18-Jun-02	Pacific Cod	2221096-1097	50		0	2	0	2	LWSM	
18-Jun-02	Pacific Cod	2221098-1103	51		2	4	0	6	LWSM	

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples				Sample Collected		
					Male	Female	Unknown	Total	(a)	Type	Preserved
18-Jun-02	Pacific Cod	2221004-1107	52		0	4	0	4	LWSM		
19-Jun-02	Pacific Cod	2221108-1109	53		1	2	0	3	LWSM		
19-Jun-02	Pacific Cod	2221110-1115	54		2	4	0	6	LWSM		
19-Jun-02	Pacific Cod	2221116-1143	55		15	13	0	28	LWSM		
19-Jun-02	Pacific Cod	2221144	56		1	0	0	1	LWSM		
19-Jun-02	Pacific Cod	2221145-1149	57		3	2	0	5	LWSM		
19-Jun-02	Pacific Cod	2221150-1239	58		55	35	0	90	LWSM		
19-Jun-02	Pacific Cod	2221240-1241	59		1	1	0	2	LWSM		
20-Jun-02	Pacific Cod	2221242	61		0	1	0	1	LWSM		
20-Jun-02	Pacific Cod	2221243-1247	63		1	4	0	5	LWSM		
20-Jun-02	Pacific Cod	2221248-1256	64		5	4	0	9	LWSM		
20-Jun-02	Pacific Cod	2221257-1451	65		93	107	0	200	LWSM		
20-Jun-02	Pacific Cod	2221452-1458	66		4	3	0	7	LWSM		
20-Jun-02	Pacific Cod	2221459	67		0	2	0	2	LWSM		
20-Jun-02	Pacific Cod	2221460	69		0	1	0	1	LWSM		
21-Jun-02	Pacific Cod	2221480	70		1	0	0	1	LWSM		
21-Jun-02	Pacific Cod	2221481	71		1	0	0	1	LWSM		
21-Jun-02	Pacific Cod	2221482-1486	72		1	4	0	5	LWSM		
21-Jun-02	Pacific Cod	2221487-1512	73		28	18	0	46	LWSM		
21-Jun-02	Pacific Cod	2221513	74		1	0	0	1	LWSM		
21-Jun-02	Pacific Cod	2221514-1515	75		2	0	0	2	LWSM		
22-Jun-02	Pacific Cod	2221516-1521	78		3	3	0	6	LWSM		
22-Jun-02	Pacific Cod	2221522-1523	79		1	1	0	2	LWSM		
22-Jun-02	Pacific Cod	2221524-1546	80		9	14	0	23	LWSM		
22-Jun-02	Pacific Cod	2221547	82		0	1	0	1	LWSM		
26-Jun-02	Pacific Cod	2221548	84		0	1	0	1	LWSM		
26-Jun-02	Pacific Cod	2221549	85		1	0	0	1	LWSM		
26-Jun-02	Pacific Cod	2221550-1551	86		1	1	0	2	LWSM		
26-Jun-02	Pacific Cod	2221552-1553	88		1	1	0	2	LWSM		
26-Jun-02	Pacific Cod	2221554	96		0	1	0	1	LWSM		
20-Jun-02	Pacific Cod	2221555-1665	65		59	52	0	111	LWSM	111 stomachs taken	frozen
TOTAL					798	783	2	1581			
11-Jun-02	Lingcod	4670001-7	2		5	2	0	7	LWSM	second dorsal fin	frozen

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Number of Samples		Sample Collected		
							Unknown	Total	(a)	Type	Preserved
11-Jun-02	Lingcod	4670008-10	4		0	3	0	3	LWSM	second dorsal fin	frozen
11-Jun-02	Lingcod	4670011-33	5		9	14	0	23	LWSM	second dorsal fin	frozen
11-Jun-02	Lingcod	4670034	6		0	1	0	1	LWSM	second dorsal fin	frozen
12-Jun-02	Lingcod	4670035-39	8		0	5	0	5	LWSM	second dorsal fin	frozen
12-Jun-02	Lingcod	4670040-43	9		0	4	0	4	LWSM	second dorsal fin	frozen
12-Jun-02	Lingcod	4670044-46	10		1	2	0	3	LWSM	second dorsal fin	frozen
13-Jun-02	Lingcod	4670047	17		1	0	0	1	LWSM	second dorsal fin	frozen
13-Jun-02	Lingcod	4670048	19		0	1	0	1	LWSM	second dorsal fin	frozen
13-Jun-02	Lingcod	4670049-50	20		0	2	0	2	LWSM	second dorsal fin	frozen
14-Jun-02	Lingcod	4670051-55	22		2	3	0	5	LWSM	second dorsal fin	frozen
14-Jun-02	Lingcod	4670056-61	27		2	4	0	6	LWSM	second dorsal fin	frozen
16-Jun-02	Lingcod	4670062	41		1	0	0	1	LWSM	second dorsal fin	frozen
18-Jun-02	Lingcod	4670063	51		1	0	0	1	LWSM	second dorsal fin	frozen
19-Jun-02	Lingcod	4670064-68	54		3	2	0	5	LWSM	second dorsal fin	frozen
19-Jun-02	Lingcod	4670069	55		0	1	0	1	LWSM	second dorsal fin	frozen
19-Jun-02	Lingcod	4670070	58		0	1	0	1	LWSM	second dorsal fin	frozen
20-Jun-02	Lingcod	4670071	61		0	1	0	1	LWSM	second dorsal fin	frozen
20-Jun-02	Lingcod	4670072	65		0	1	0	1	LWSM	second dorsal fin	frozen
20-Jun-02	Lingcod	4670073	67		0	1	0	1	LWSM	second dorsal fin	frozen
21-Jun-02	Lingcod	4670074	72		0	1	0	1	LWSM	second dorsal fin	frozen
21-Jun-02	Lingcod	4670075-77	73		1	2	0	3	LWSM	second dorsal fin	frozen
22-Jun-02	Lingcod	4670078	78		0	1	0	1	LWSM	second dorsal fin	frozen
22-Jun-02	Lingcod	4670079	80		0	1	0	1	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670080-83	81		0	4	0	4	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670084	82		0	1	0	1	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670085-87	87		0	3	0	3	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670088-89	88		0	2	0	2	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670090-93	89		0	4	0	4	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670094-99	91		2	4	0	6	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670100-101	93		0	2	0	2	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670102-104	94		1	2	0	3	LWSM	second dorsal fin	frozen
26-Jun-02	Lingcod	4670105	96		0	1	0	1	LWSM	second dorsal fin	frozen
TOTAL					29	76		105			

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Number of Samples				Sample Collected		
					Male	Female	Unknown	Total	(a)	Type	Preserved
11-Jun-02	Bocaccio	4350001	2	435-1	1	0	0	1	LWSM	otoliths	
11-Jun-02	Bocaccio	4350002-004	1	435-1	3	0	0	3	LWSM	otoliths	
12-Jun-02	Bocaccio	4350005	4	435-1	1	0	0	1	LWSM	otoliths	
12-Jun-02	Bocaccio	4350006	13	435-1	1	0	0	1	LWSM	otoliths	
19-Jun-02	Bocaccio	4350007	53	435-1	0	1	0	1	LWSM	otoliths	
20-Jun-02	Bocaccio	4350008	67	435-1	0	1	0	1	LWSM	otoliths	
	Bocaccio			TOTAL	6	2	0	8			
22-Jun-02	Yellowtail Rockfish	4180001-2	79	418-1	2	0	0	2	LWSM	otoliths	
	Yellowtail Rockfish			TOTAL	2	0	0	2			
19-Jun-02	Copper Rockfish	4070001-005	54	407-1	4	1	0	5	LWSM	otoliths	
	Copper Rockfish			TOTAL	4	1	0	5			
19-Jun-02	Quillback Rockfish	4240001-015	54	424-1	8	7	0	15	LWSM	otoliths	
20-Jun-02	Quillback Rockfish	42420016	62	424-1	1	0	0	1	LWSM	otoliths	
20-Jun-02	Quillback Rockfish	42420017-020	69	424-1	4	0	0	4	LWSM	otoliths	
22-Jun-02	Quillback Rockfish	42420021-029	78	424-1	5	4	0	9	LWSM	otoliths	
	Quillback			TOTAL	18	11	0	29			
21-Jun-02	Pacific Ocean Perch	3960001-017	75	396-1	9	8	0	17	LWSM	otoliths	
	Pacific Ocean Perch			TOTAL	9	8	0	17			

(a) L-length, W-weight, S-sex, M-maturity

Table 4. Summary of biological data collected by species for all samples taken during the multispecies survey of Hecate Strait on the F/V *Viking Storm*, June 10 - 28, 2002.

No.	Species Code	Species Common Name	Species Scientific Name	Length Recorded	Weight Recorded	Sex Recorded	Maturity Recorded	Otoliths Collected	Stomach Collected	Pectoral Fins Collected
Flatfish										
1	628	English Sole	<i>Pleuronectes vetulus</i>	8281	600	7900	600	600	0	0
2	610	Rex Sole	<i>Errex zachirus</i>	6105	200	5767	200	200	0	0
3	602	Arrowtooth Flounder	<i>Atheresthes stomias</i>	4966	195	4384	195	195	0	0
4	621	Rock Sole	<i>Pleuronectes bilineatus</i>	4819	932	4819	917	931	0	0
5	626	Dover Sole	<i>Microstomus pacificus</i>	4093	669	4093	646	669	0	0
6	596	Pacific Sanddab	<i>Citharichthys sordidus</i>	3139	73	2890	72	73	0	0
7	612	Flathead Sole	<i>Hippoglossoides elassodon</i>	1503	172	1503	172	172	0	0
8	636	Sand Sole	<i>Psettichthys melanostictus</i>	1197	357	1190	356	357	0	0
9	619	Butter Sole	<i>Pleuronectes isolepis</i>	438	100	384	100	100	0	0
10	607	Petrale Sole	<i>Eopsetta jordani</i>	374	359	374	359	359	0	0
11	625	Slender Sole	<i>Eopsetta exilis</i>	309	117	310	117	117	0	0
12	614	Pacific Halibut	<i>Hippoglossus stenolepis</i>	277	0	244	0	0	0	0
13	635	Curtfin Sole	<i>Pleuronichthys decurrens</i>	74	74	74	74	74	0	0
14	631	Starry Flounder	<i>Platichthys stellatus</i>	23	17	23	17	17	0	0
Roundfish										
15	226	Pacific Tomcod	<i>Microgadus proximus</i>	2015	50	1894	50	50	0	0
16	228	Walleye Pollock	<i>Theragra chalcogramma</i>	1720	207	1031	207	207	0	10
17	222	Pacific Cod	<i>Gadus macrocephalus</i>	1580	1581	1579	1576	0	159	0
18	361	Pacific Sand Lance	<i>Ammodytes hexapterus</i>	698	0	0	0	0	0	0
19	455	Sablefish	<i>Anoplopoma fimbria</i>	328	199	328	199	199	0	0
20	148	Eulachon	<i>Thaleichthys pacificus</i>	187	0	0	0	0	0	0
21	233	Bigfin Eelpout	<i>Lycodes cortezianus</i>	173	0	0	0	0	0	0
22	96	Pacific Herring	<i>Clupea pallasii</i>	166	0	58	0	0	0	0
23	467	Lingcod	<i>Ophiodon elongatus</i>	105	105	105	82	0	0	0
24	461	Kelp Greenling	<i>Hexagrammos decagrammus</i>	27	0	27	0	0	0	0
Selachii										
25	66	Spotted Ratfish	<i>Hydrolagus collieri</i>	3446	0	3349	0	0	0	0
26	44	Spiny Dogfish	<i>Squalus acanthias</i>	1609	0	1588	0	0	0	0
27	56	Big Skate	<i>Raja binoculata</i>	178	89	89	87	0	0	0
28	59	Longnose Skate	<i>Raja rhina</i>	36	17	18	18	0	0	0

No.	Species Code	Species Common Name	Species Scientific Name	Length Recorded	Weight Recorded	Sex Recorded	Maturity Recorded	Otoliths Collected	Stomach Collected	Pectoral Fins Collected
29	58	Sandpaper Skate	<i>Bathyraja interrupta</i>	10	5	4	0	0	0	0
		Rockfish								
30	424	Quillback Rockfish	<i>Sebastes maliger</i>	29	29	29	29	29	0	0
31	396	Pacific Ocean Perch	<i>Sebastes alutus</i>	29	29	28	28	29	0	0
32	435	Bocaccio	<i>Sebastes paucispinis</i>	8	8	8	8	8	0	0
33	405	Silvergray Rockfish	<i>Sebastes brevispinis</i>	7	0	7	0	0	0	0
34	407	Copper Rockfish	<i>Sebastes caurinus</i>	5	5	5	5	5	0	0
35	418	Yellowtail Rockfish	<i>Sebastes flavidus</i>	2	2	2	2	2	0	0
Total				47956	6191	44114	6116	4393	159	10

Table 5. Summary of samples morphometrics attribute collected during the multispecies survey of Hecate Strait on the F/V *Viking Storm*, June 10 - 28, 2002.

No. Code	Species	Scientific Name	Number Specimens (a)							LW	L
			LWSMO	LWSM	LWS	LS	LW	L			
Flatfish											
1 628	English Sole	<i>Pleuronectes vetulus</i>	8281	600	0	0	7300	0	381		
2 610	Rex Sole	<i>Errex zachirus</i>	6105	200	0	0	5567	0	338		
3 602	Arrowtooth Flounder	<i>Atheresthes stomias</i>	4968	195	0	0	4201	0	572		
4 621	Rock Sole	<i>Pleuronectes bilineatus</i>	4819	931	1	0	3887	0	0		
5 626	Dover Sole	<i>Microstomus pacificus</i>	4093	669	0	0	3424	0	0		
6 596	Pacific Sanddab	<i>Citharichthys sordidus</i>	3139	72	0	0	2817	0	249		
7 612	Flathead Sole	<i>Hippoglossoides elassodon</i>	1503	172	0	0	1331	0	0		
8 636	Sand Sole	<i>Psettichthys melanostictus</i>	1197	357	0	0	833	0	7		
9 619	Butter Sole	<i>Pleuronectes isolepis</i>	438	100	0	0	284	0	54		
10 607	Petrale Sole	<i>Eopsetta jordani</i>	374	359	0	0	15	0	0		
11 625	Slender Sole	<i>Eopsetta exilis</i>	310	116	0	0	193	0	0		
12 614	Pacific Halibut	<i>Hippoglossus stenolepis</i>	277	0	0	0	244	0	33		
13 635	Curfin Sole	<i>Pleuronichthys decurrens</i>	74	74	0	0	0	0	0		
14 631	Starry Flounder	<i>Platichthys stellatus</i>	23	17	0	0	6	0	0		
Roundfish											
1 226	Pacific Tomcod	<i>Microgadus proximus</i>	2015	50	0	0	1844	0	121		
2 228	Walleye Pollock	<i>Theragra chalcogramma</i>	1720	207	0	0	824	0	689		
3 222	Pacific Cod	<i>Gadus macrocephalus</i>	1581	0	1580	0	1	0	0		
4 361	Pacific Sand Lance	<i>Ammodytes hexapterus</i>	698	0	0	0	0	0	698		
5 455	Sablefish	<i>Anoplopoma fimbria</i>	328	199	0	0	129	0	0		
6 148	Eulachon	<i>Thaleichthys pacificus</i>	187	0	0	0	0	0	187		
7 233	Bigfin Eelpout	<i>Lycodes cortezianus</i>	173	0	0	0	0	0	173		
8 96	Pacific Herring	<i>Clupea pallasii</i>	166	0	0	0	58	0	108		
9 467	Lingcod	<i>Ophiodon elongatus</i>	105	0	82	0	23	0	0		
10 461	Kelp Greenling	<i>Hexagrammos decagrammus</i>	27	0	0	0	27	0	0		
Selachii											
1 66	Spotted Ratfish	<i>Hydrolagus coliei</i>	3446	0	0	0	3349	0	97		
2 44	Spiny Dogfish	<i>Squalus acanthias</i>	1609	0	0	0	1588	0	21		
3 56	Big Skate	<i>Raja binoculata</i>	178	0	1	88	0	89	0		
4 59	Longnose Skate	<i>Raja rhina</i>	36	0	17	18	1	0	0		

(a) L-length, W-weight, S-sex, M-maturity, O-otolith

Species No. Code	Species	Scientific Name	Number Specimens		(a)	LWSMO	LWSM	LWS	LS	LW	L
5 58	Sandpaper Skate	<i>Bathyraja interrupta</i>	10	0	0	5	4	1	0	0	0
	Rockfish										
1 396	Pacific Ocean Perch	<i>Sebastes alutus</i>	29	28	1	0	0	0	0	0	0
2 424	Quillback Rockfish	<i>Sebastes maliger</i>	29	29	0	0	0	0	0	0	0
3 435	Bocaccio	<i>Sebastes paucispinis</i>	8	8	0	0	0	0	0	0	0
4 405	Silvergray Rockfish	<i>Sebastes brevispinis</i>	7	0	0	0	0	0	7	0	0
5 407	Copper Rockfish	<i>Sebastes caurinus</i>	5	5	0	0	0	0	0	0	0
6 418	Yellowtail Rockfish	<i>Sebastes flavidus</i>	2	2	0	0	0	0	0	0	0
	Total		47960	4390	1687	110	26	38017	0	3728	

(a) L-length, W-weight, S-sex, M-maturity, O-otolith

Table 7. Regression parameters for log(weight) vs log(length) for selected species during the multispecies survey of Hecate Strait in 2002.

Species	Sex	N	r	a		95% Confidence interval		b	95% Confidence interval	
				Estimate	Lower	Upper	Estimate		Lower	Upper
English sole	Males	218	0.97138	-408.94301	-431.0077	-386.8782	2.27117	2.19669	2.3456	
	Females	376	0.95303	-561.544	-592.217	-530.871	2.877527	2.784549	2.970504	
Dover sole	Males	318	0.95559	-792.748	-1266.915	-1120.4512	3.5007	3.3812	3.6202	
	Females	324	0.93836	-1193.68	-1266.91	-1120.45	4.71334	4.522979	4.903701	
Rock sole	Males	318	0.92035	-373.54627	-402.7785	-344.3139	2.37355	2.26192	2.485185	
	Females	521	0.92491	-788.807	-834.56	-743.054	4.191903	4.043312	4.340494	
Arrowtooth flounder	Males	41	0.92619	-1019.6	-1250.74	-788.459	4.107655	3.566032	4.649279	
	Females	151	0.92787	-1685.74	-1891.24	-1480.25	50.86802	5.486431	6.249972	
Petrale sole	Males	108	0.97788	-887.4248	-942.785	-832.065	4.0098602	3.844553	4.175367	
	Females	248	0.96176	-1524.6801	-1610.19	-1439.17	6.052482	5.836015	6.26895	
Pacific Cod	Males	788	0.94617	-2125.9812	-2205.99	-2045.98	7.5605331	7.379547	7.741719	
	Females	785	0.93418	-2571.3741	-2679.79	-2462.96	8.7810375	8.545755	9.01632	

Table 8. Maturity stage for species sampled during the Hecate Strait multispecies survey on the F/V Viking Storm, June 10 - 28, 2002.

		Males								Females							
		Maturity stage															
		Immature	Maturing	Developing	Running Ripe	Spawning	Spent	Resting	Total	Immature	Maturing	Developing	Running Ripe	Spawning	Spent	Resting	Total
English sole	n	40	5	1	0	28	90	54	218	127	92	51	0	4	6	100	380
	%	18.35	2.29	0.46	0.00	12.84	41.28	24.77	100.00	33.42	24.21	13.42	0.00	1.05	1.58	26.32	100.00
Dover sole	n	26	27	7	1	14	168	74	317	72	141	3	0	1	5	102	324
	%	8.20	8.52	2.21	0.32	4.42	53.00	23.34	100.00	22.22	43.52	0.93	0	0.31	1.54	31.48	100.00
Rock sole	n	155	26	0	4	49	23	61	318	259	79	94	0	2	0	88	522
	%	48.74	8.18	0.00	1.26	15.41	7.23	19.18	100.00	49.62	15.13	18.01	0.00	0.38	0.00	16.86	100.00
Arrowtooth	n	7	3	0	0	0	3	28	41	17	9	2	1	1	5	116	151
Flounder	%	17.07	7.32	0.00	0.00	0.00	7.32	68.29	100.00	11.26	5.96	1.32	0.66	0.66	3.31	76.82	100.00
Petrale sole	n	45	20	0	0	1	4	38	108	79	48	4	0	0	1	115	247
	%	41.67	18.52	0.00	0.00	0.93	3.70	35.19	100.00	31.98	19.43	1.62	0.00	0.00	0.40	46.56	100.00
Pacific Cod	n	630	12	3	0	0	1	141	787	592	32	2	0	0	0	157	783
	%	80.051	1.525	0.38	0	0	0.127	17.916	100.00	75.61	4.09	0.26	0.00	0.00	0.00	20.05	100.00
Lingcod	n	10	2	0	0	0	0	8	20	23	14	4	0	0	0	21	62
	%	50.00	10.00	0.00	0.00	0.00	0.00	40.00	100.00	50.00	10.00	6.00	0.00	0.00	0.00	34.00	100.00

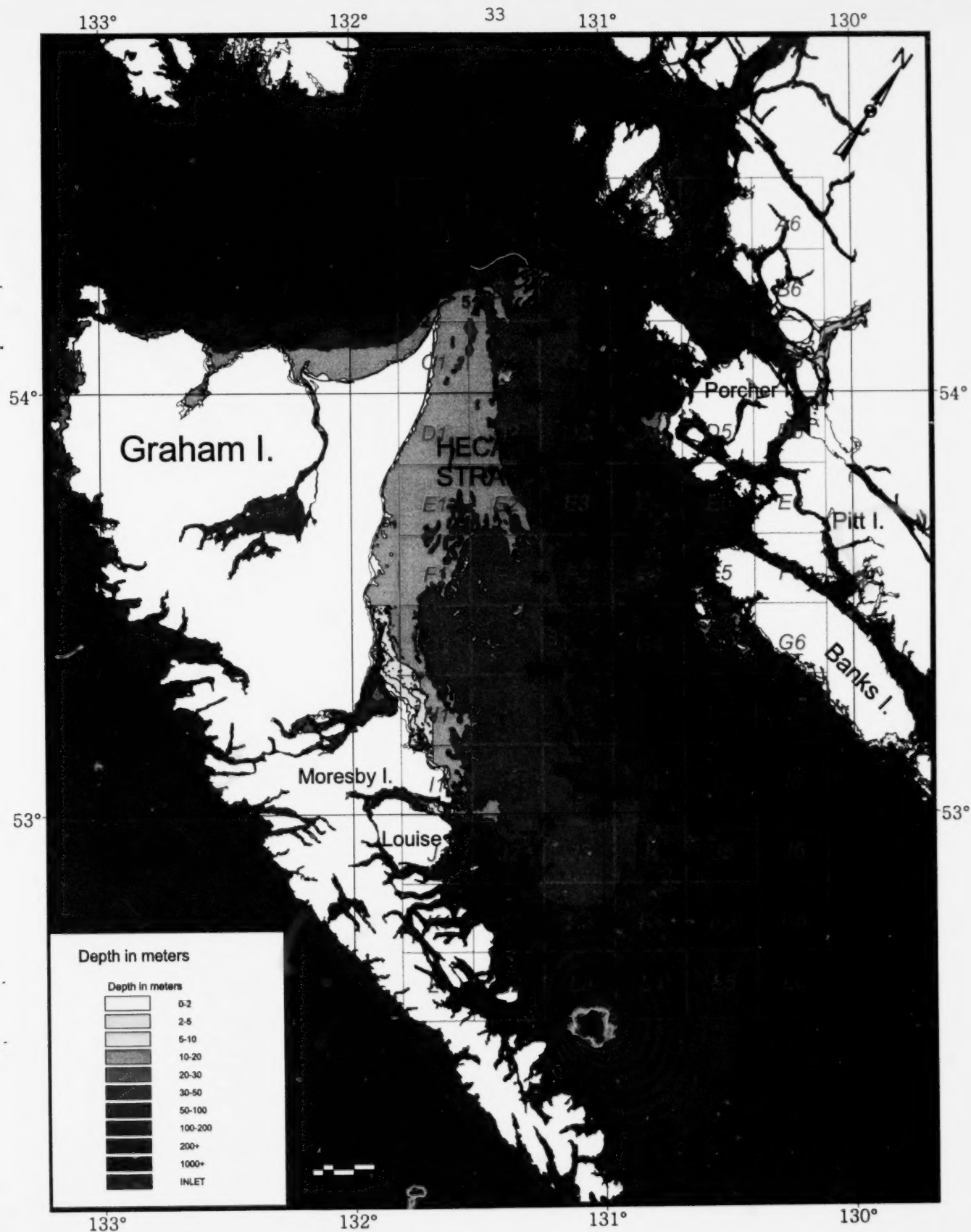


Figure 1. Haul locations and survey grid for the 2002 Hecate Strait multispecies survey on the F/V Viking Storm, June 10 - 28, 2002.

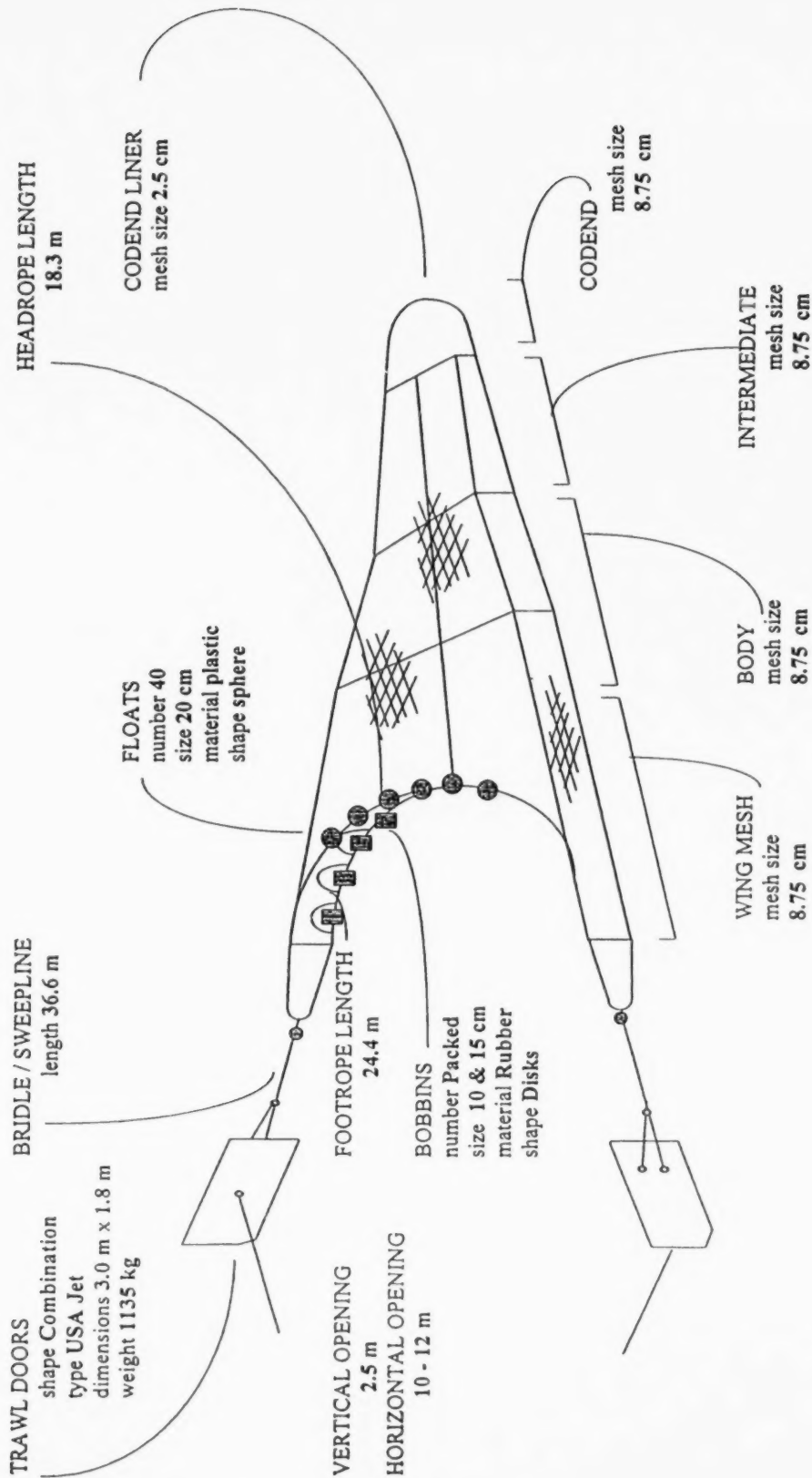


Figure 2. Specifications for the Yankee 36 trawl net used during the 2002 multispecies survey of Hecate Strait.

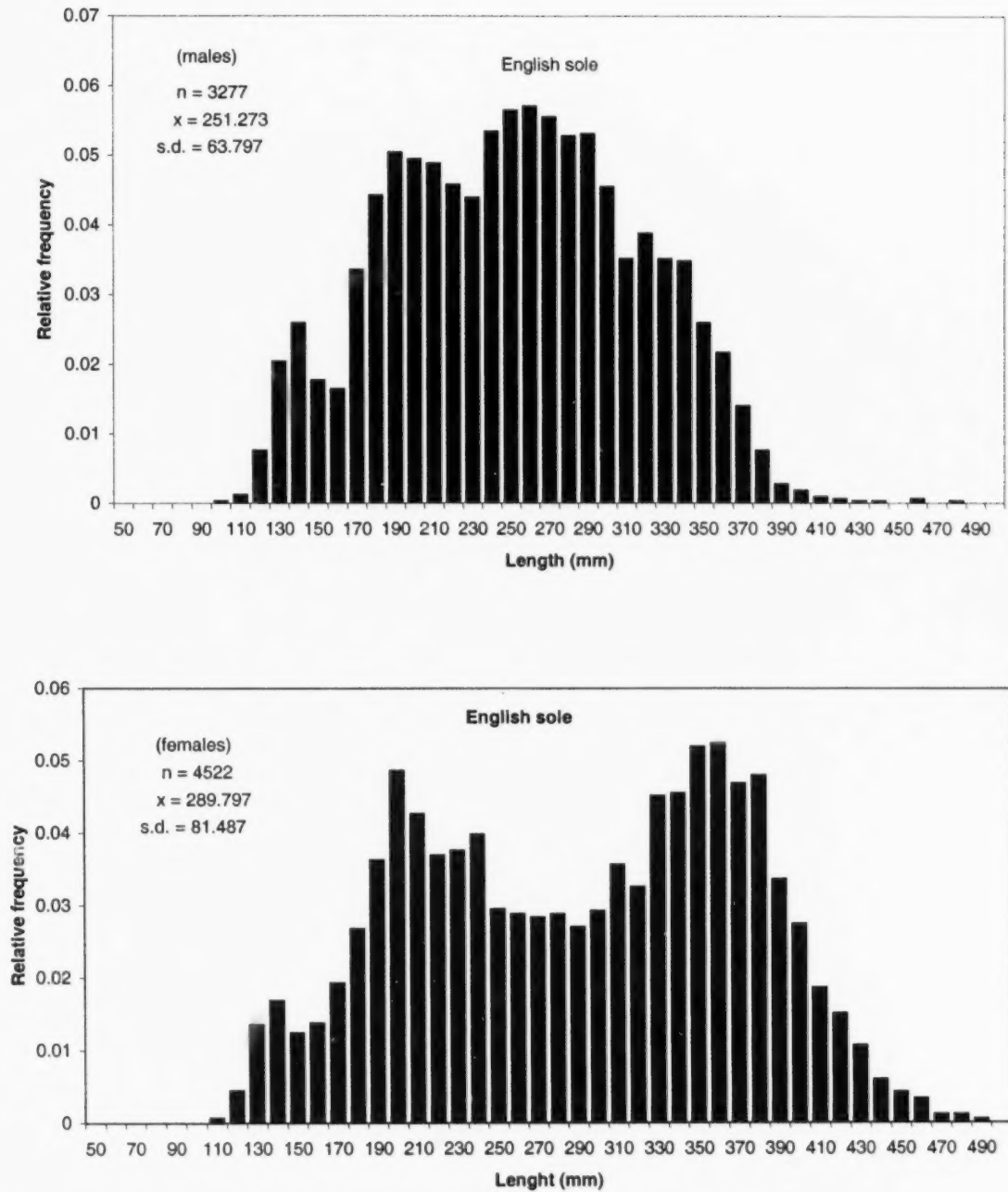


Figure 3. Length relative frequency distribution for males and females of English sole collected during the Hecate Strait multispecies survey in 2002.

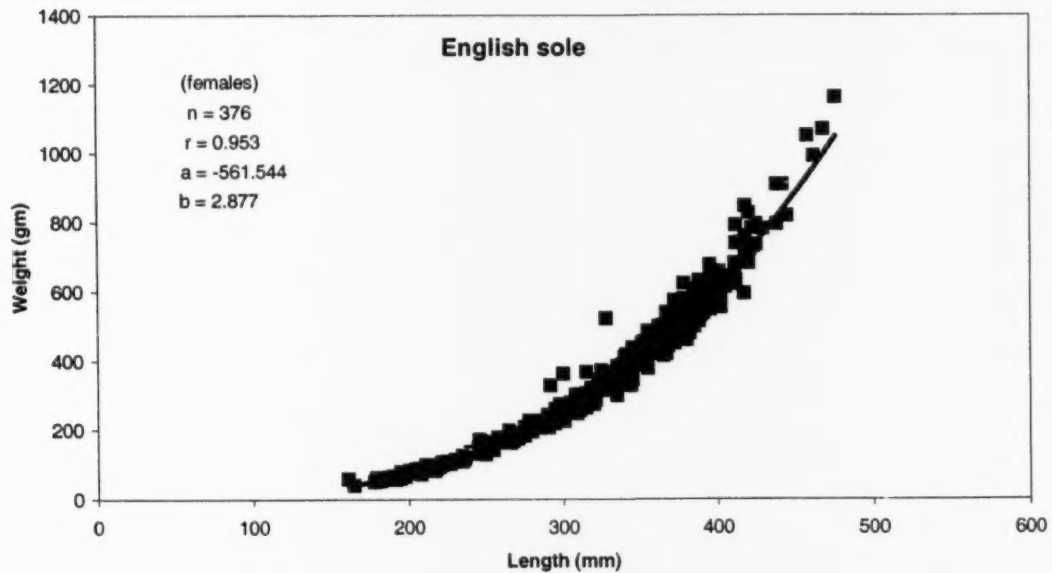
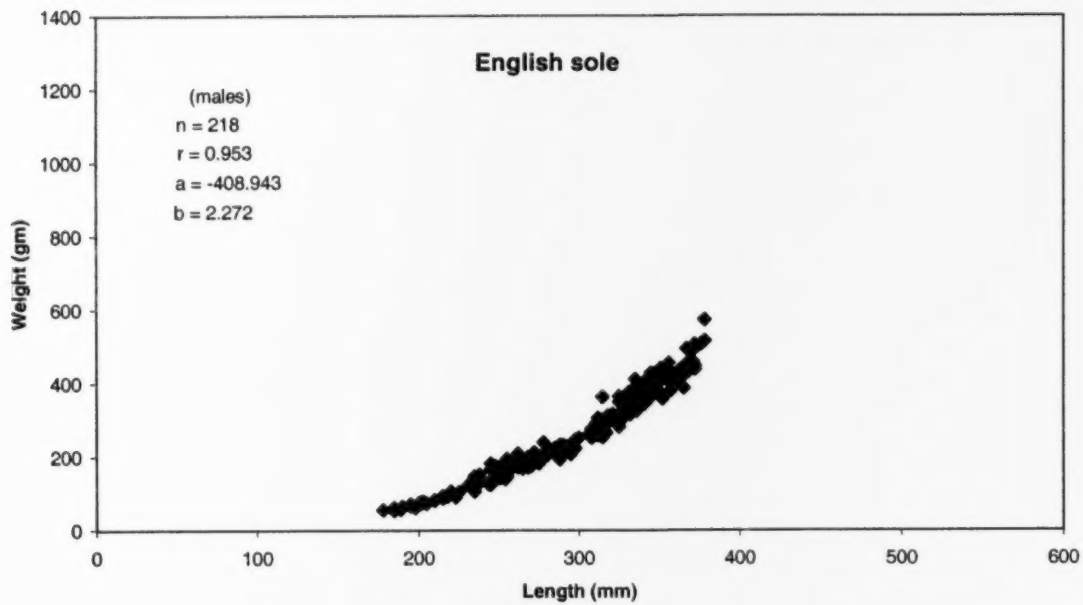


Figure 4. Length - weight relationship by sex for English sole collected during the Hecate Strait multispecies survey in 2002.

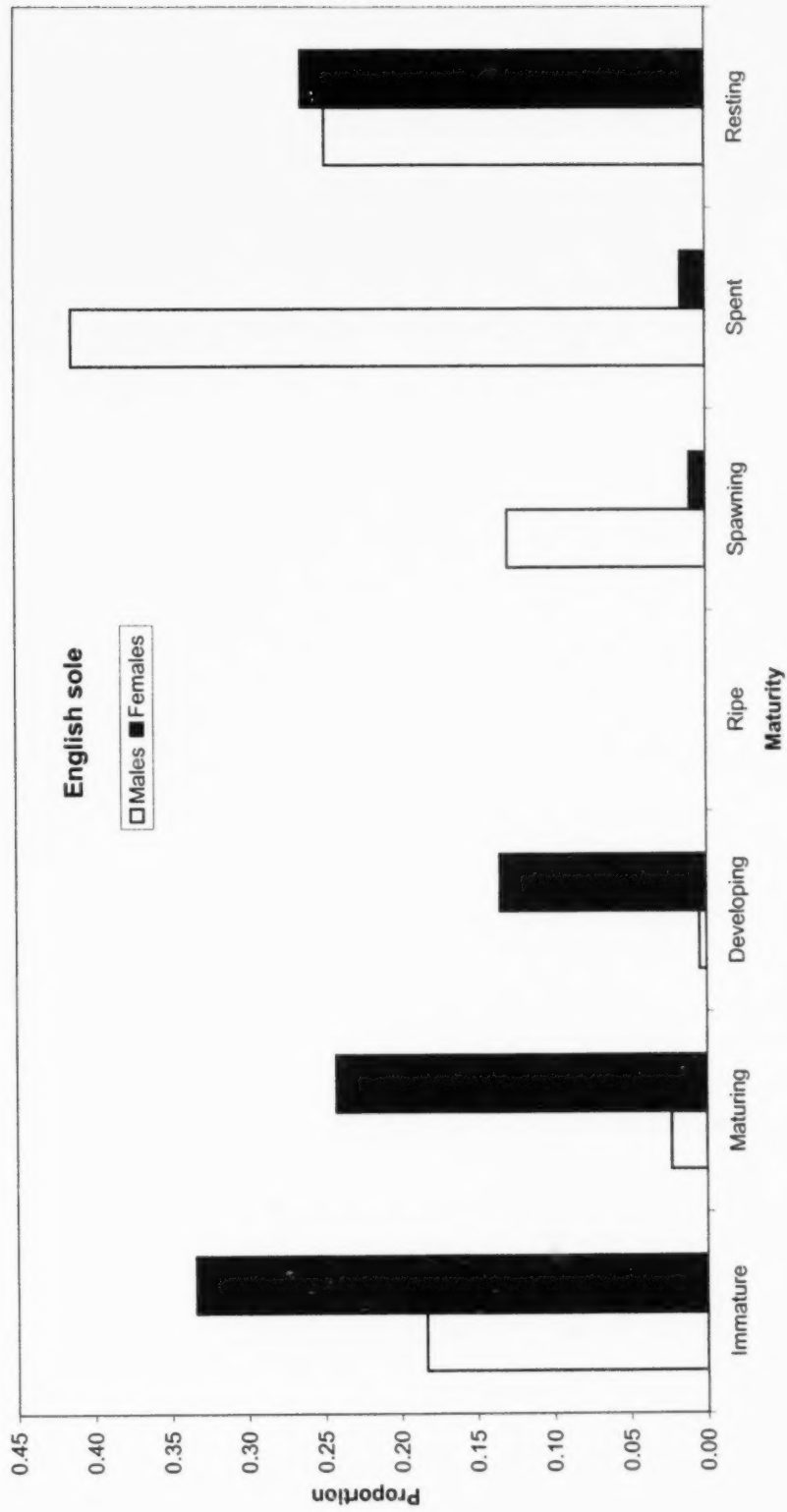


Figure 5. Stage of maturity for English sole collected during the Hecate Strait multispecies survey in 2002.

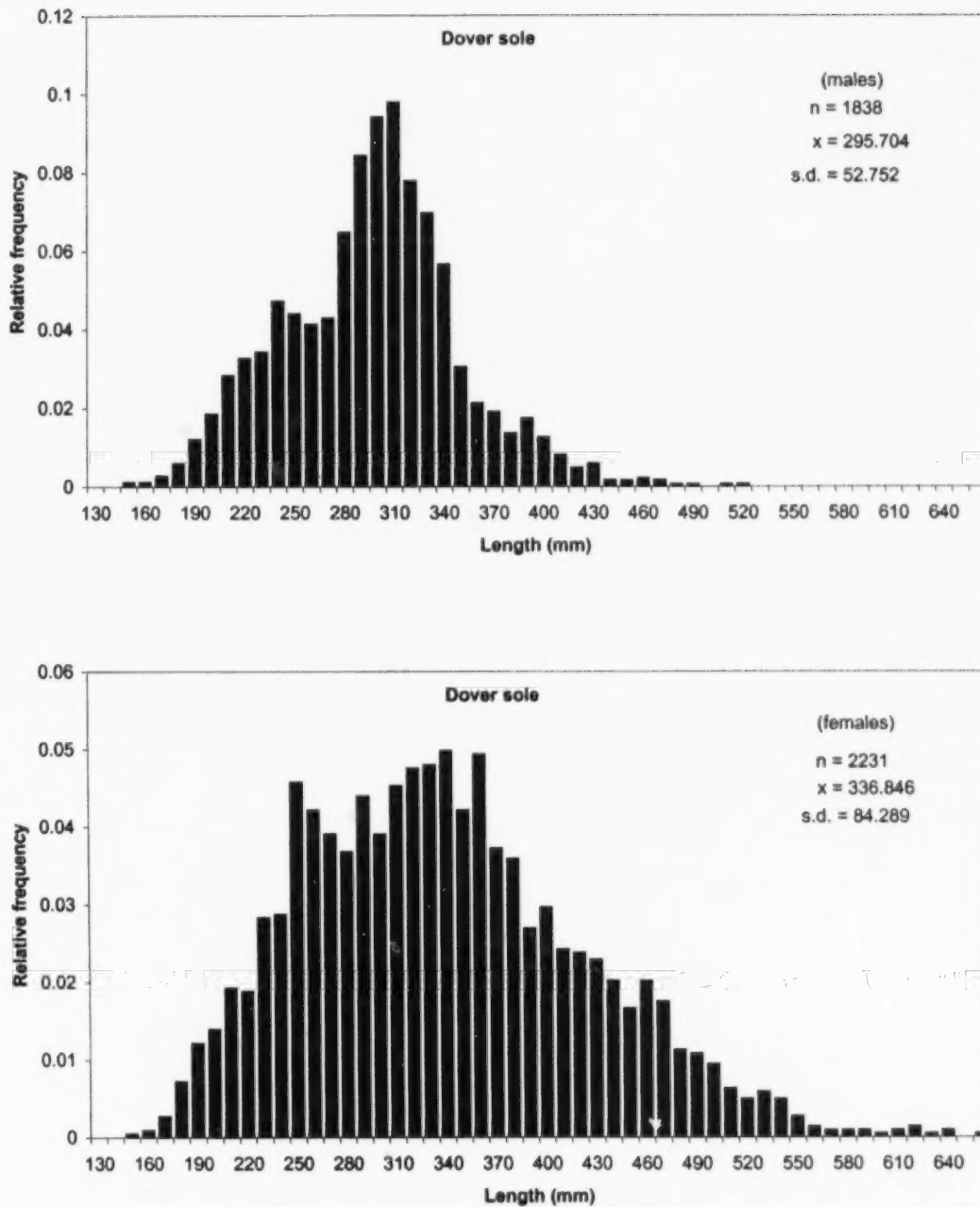


Figure 6. Length relative frequency distribution for males and females of Dover sole collected during the Hecate Strait multispecies survey in 2002.

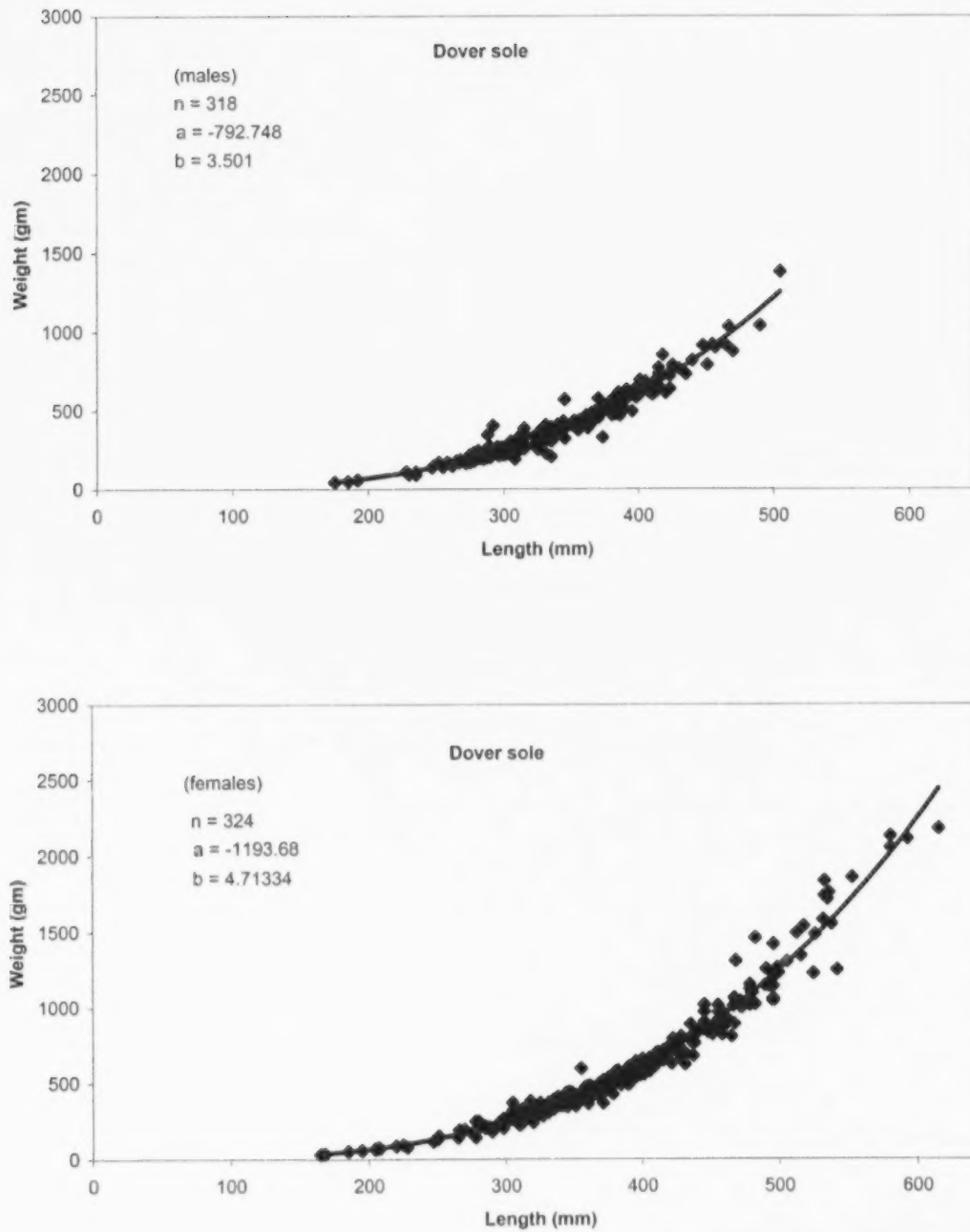


Figure 7. Length- weight relationship by sex for Dover sole collected during the Hecate Strait multispecies survey in 2002.

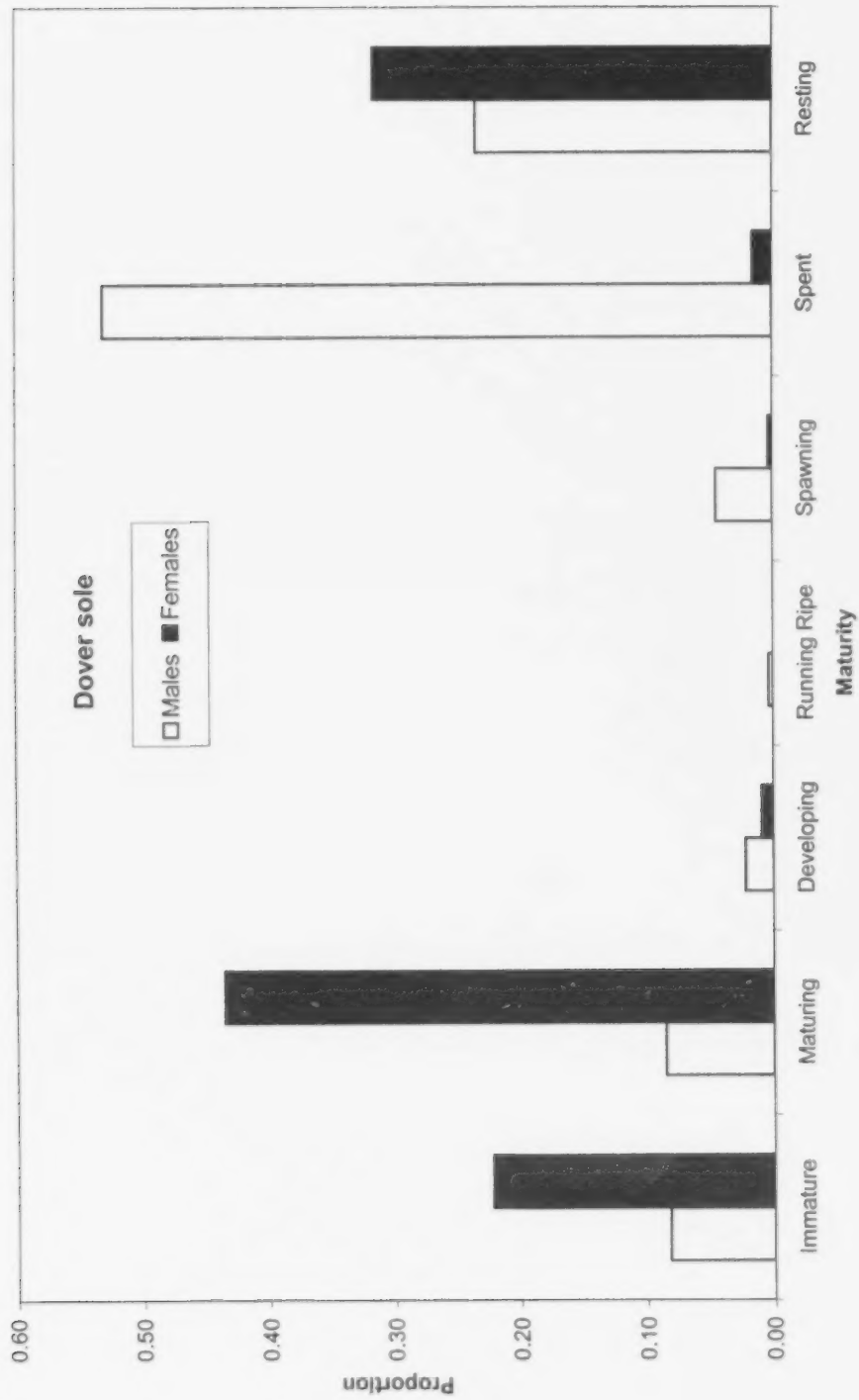


Figure 8. Stage of maturity for Dover sole collected during the Hecate Strait multispecies survey in 2002.

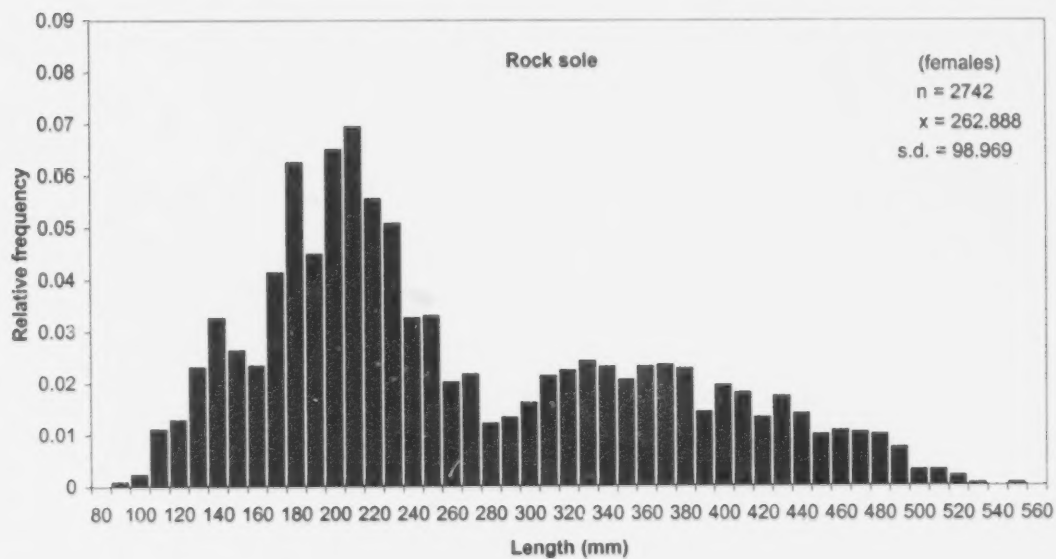
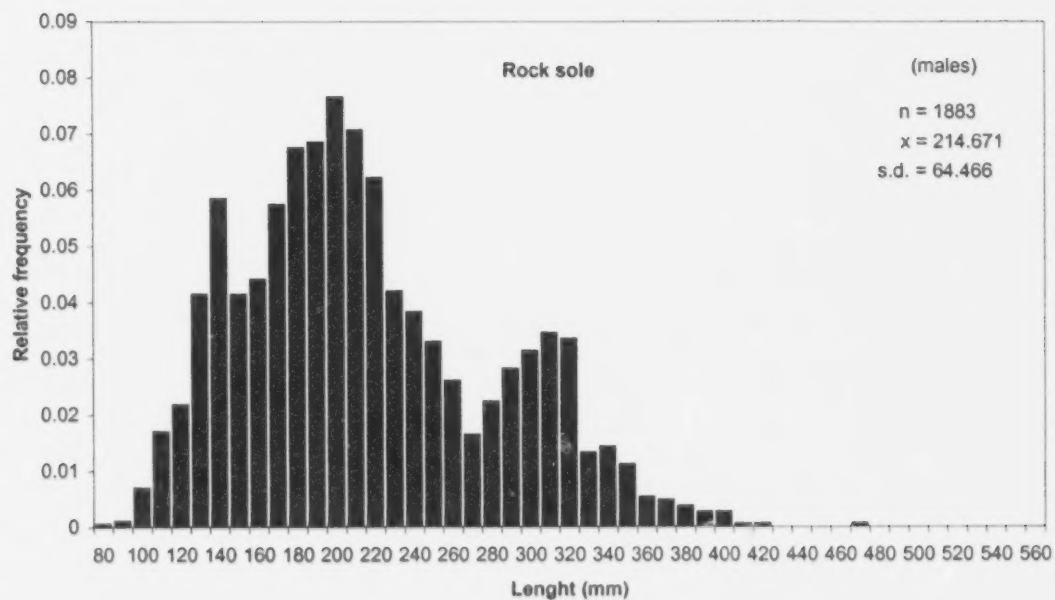


Figure 9. Length relative frequency distribution for males and females of rock sole collected during the Hecate Strait multispecies survey in 2002.

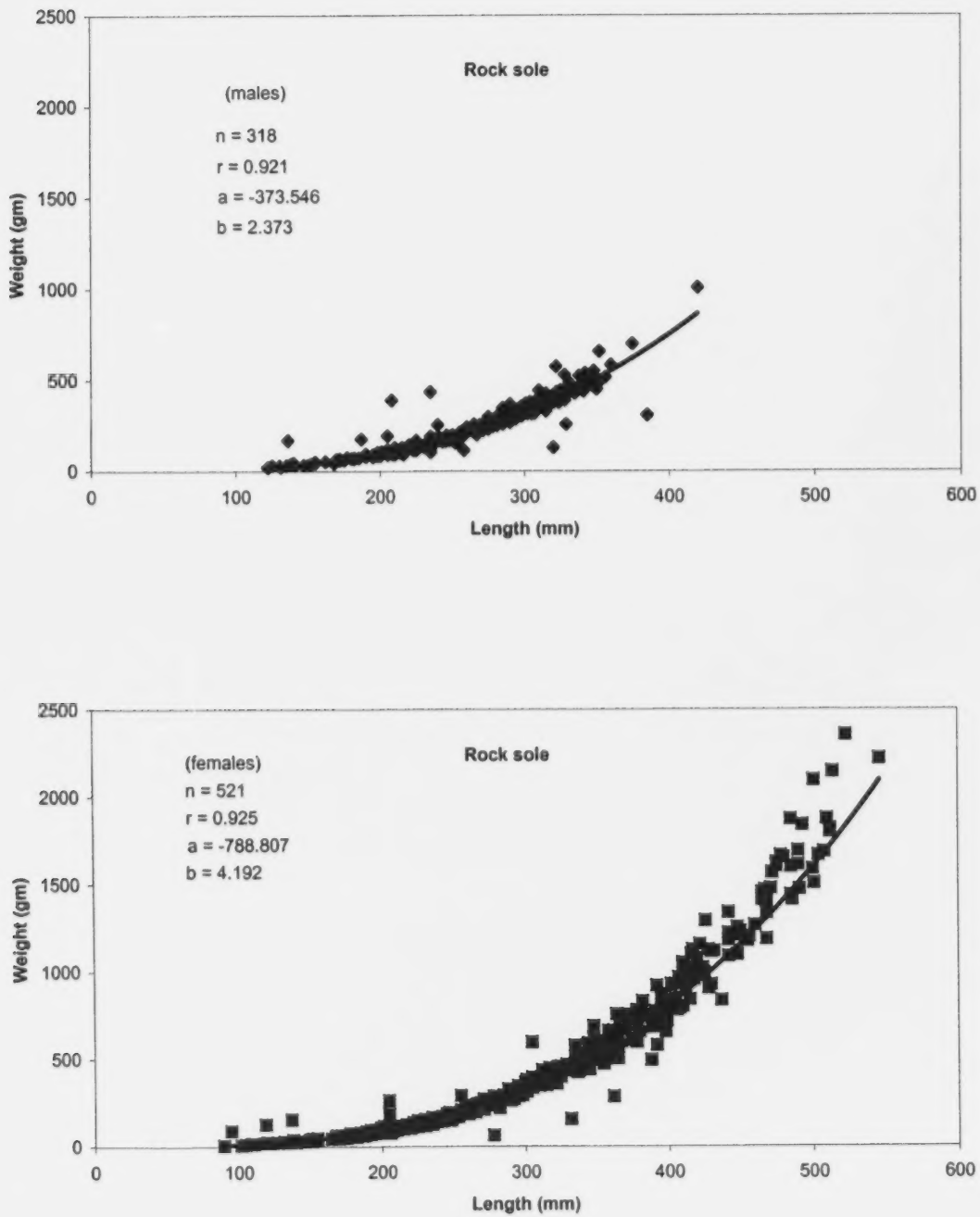


Figure 10. Length - weight relationship by sex for rock sole collected during the Hecate Strait multispecies survey in 2002.

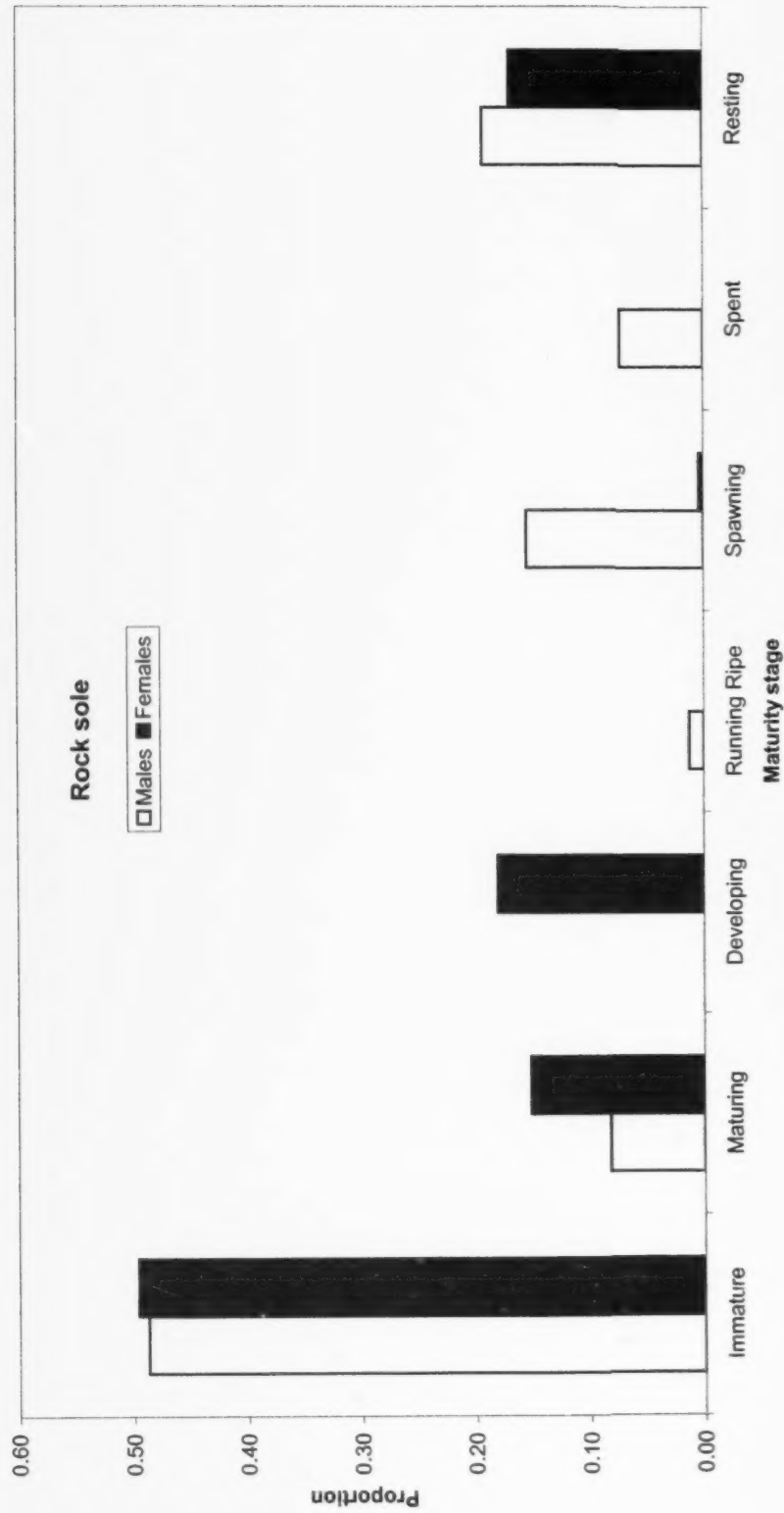


Figure 11. Stage of maturity for rock sole collected during the Hecate Strait multispecies survey in 2002.

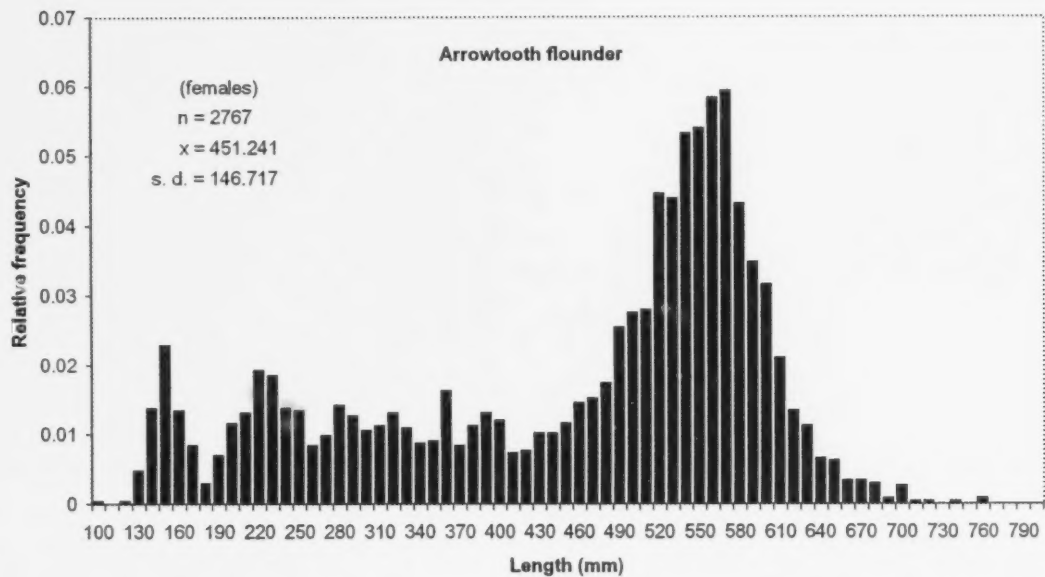
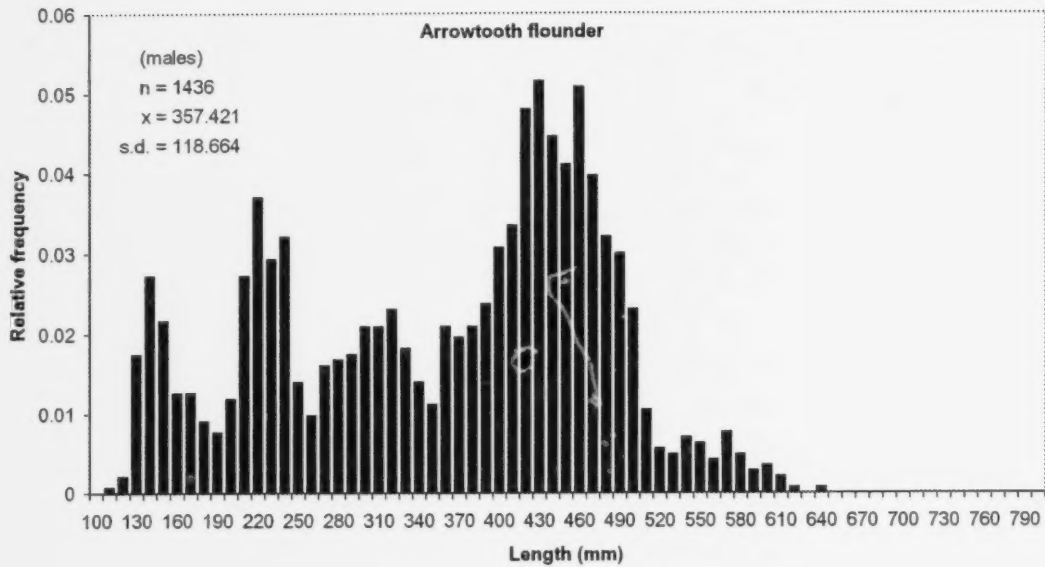


Figure 12. Length relative frequency distribution for males and females of arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.

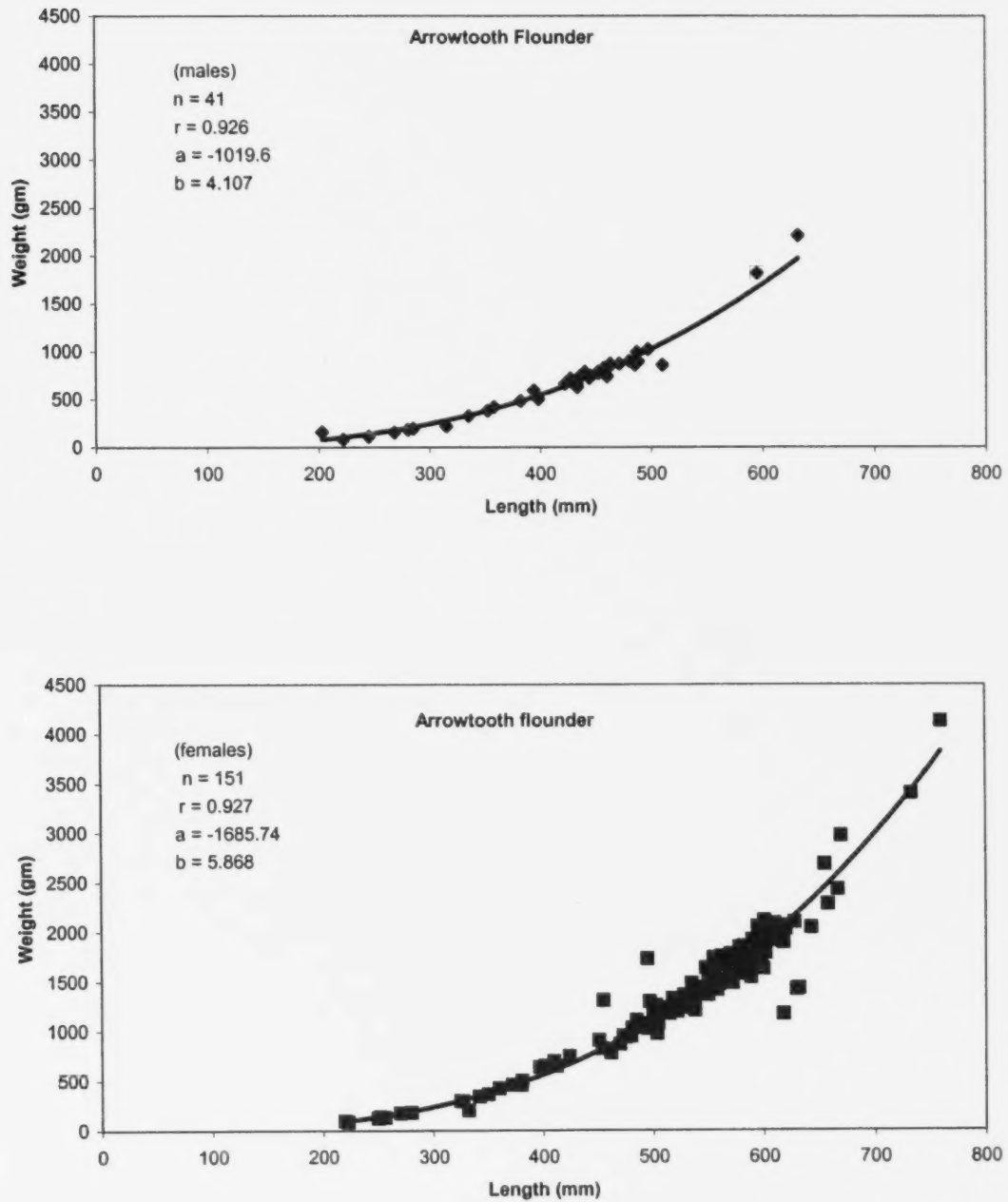


Figure 13. Length - weight relationship by sex for arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.

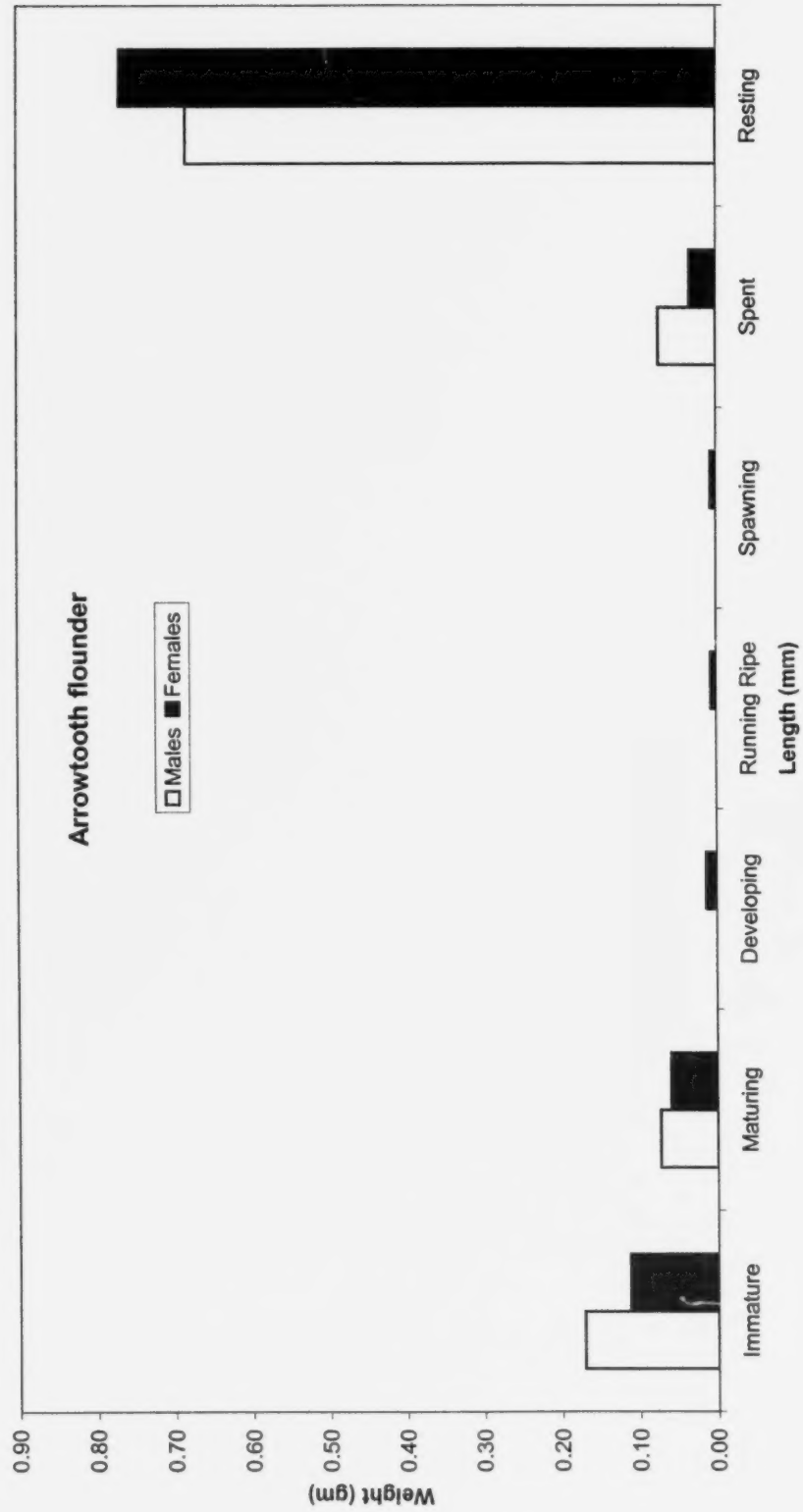


Figure 14. Stage of maturity for arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.

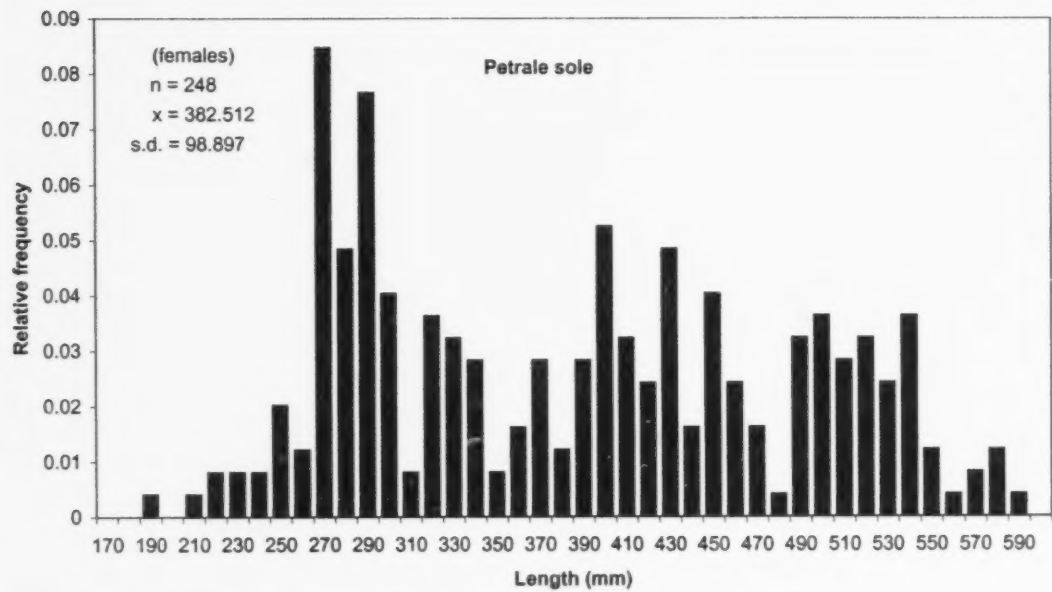
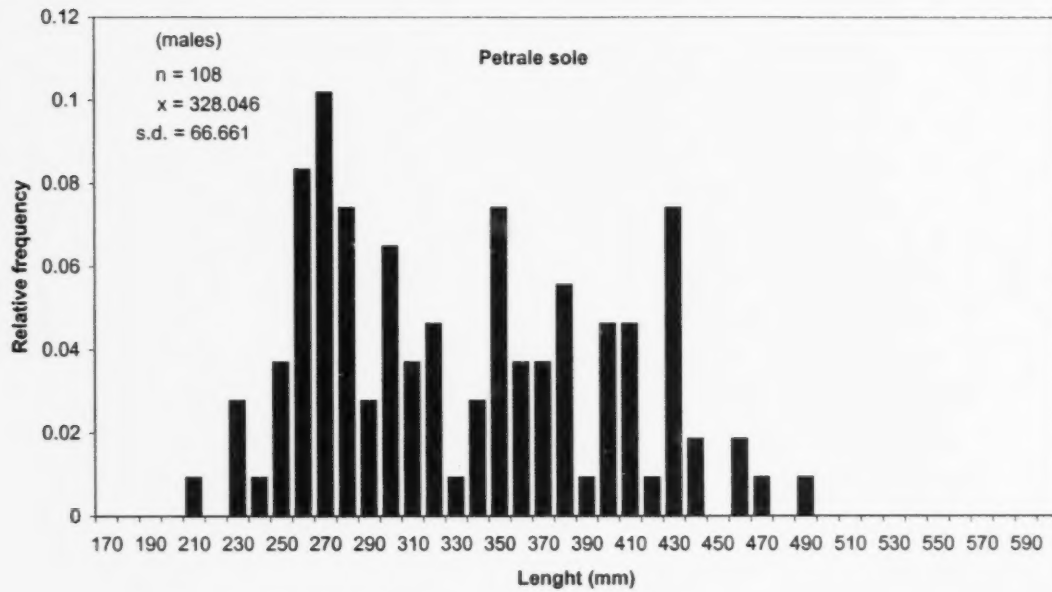


Figure 15. Length relative frequency distribution for males and females of Petrale sole collected during the Hecate Strait multispecies survey in 2002.

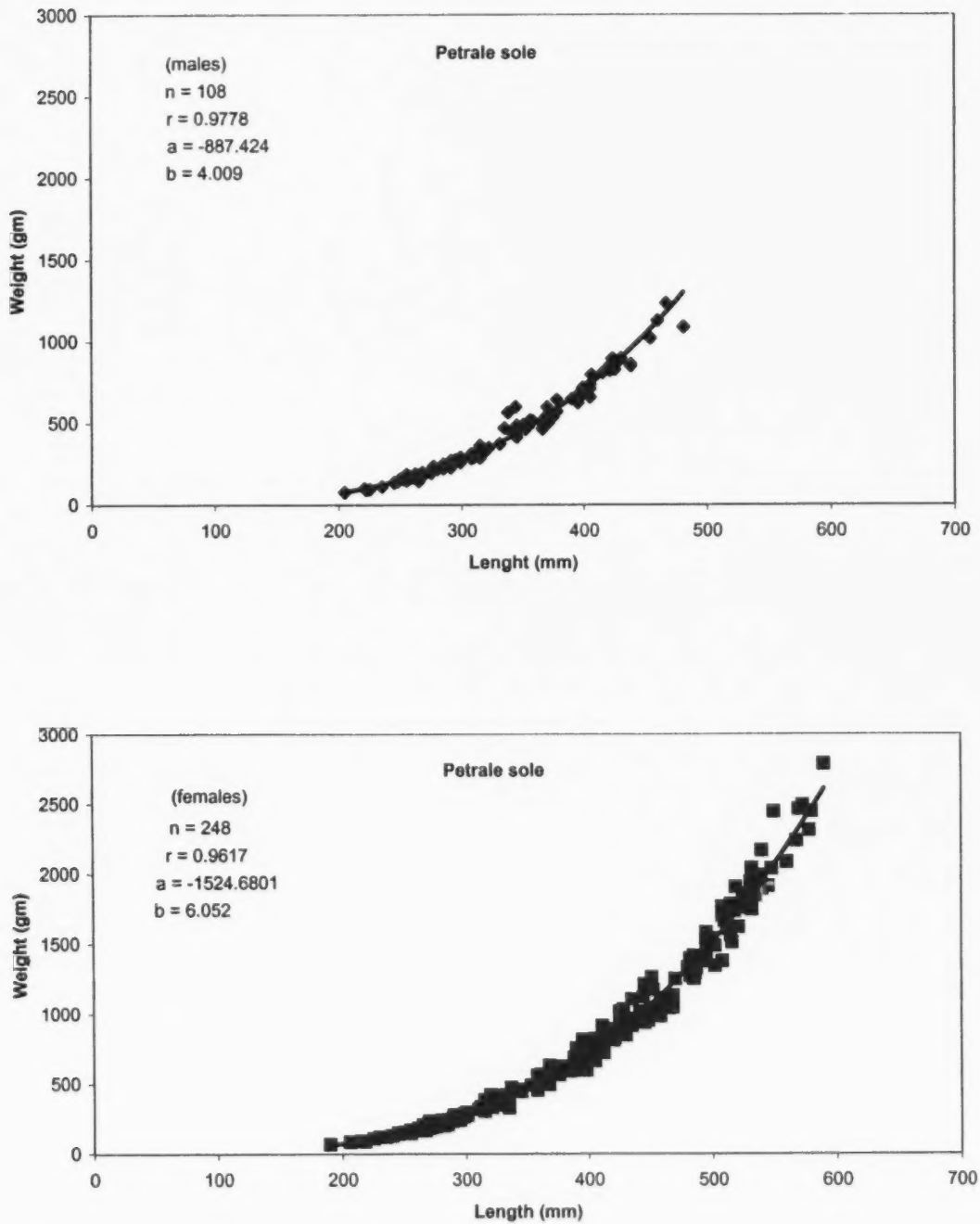


Figure 16. Length - weight relationship by sex for Petrale sole collected during the Hecate Strait multispecies survey in 2002.

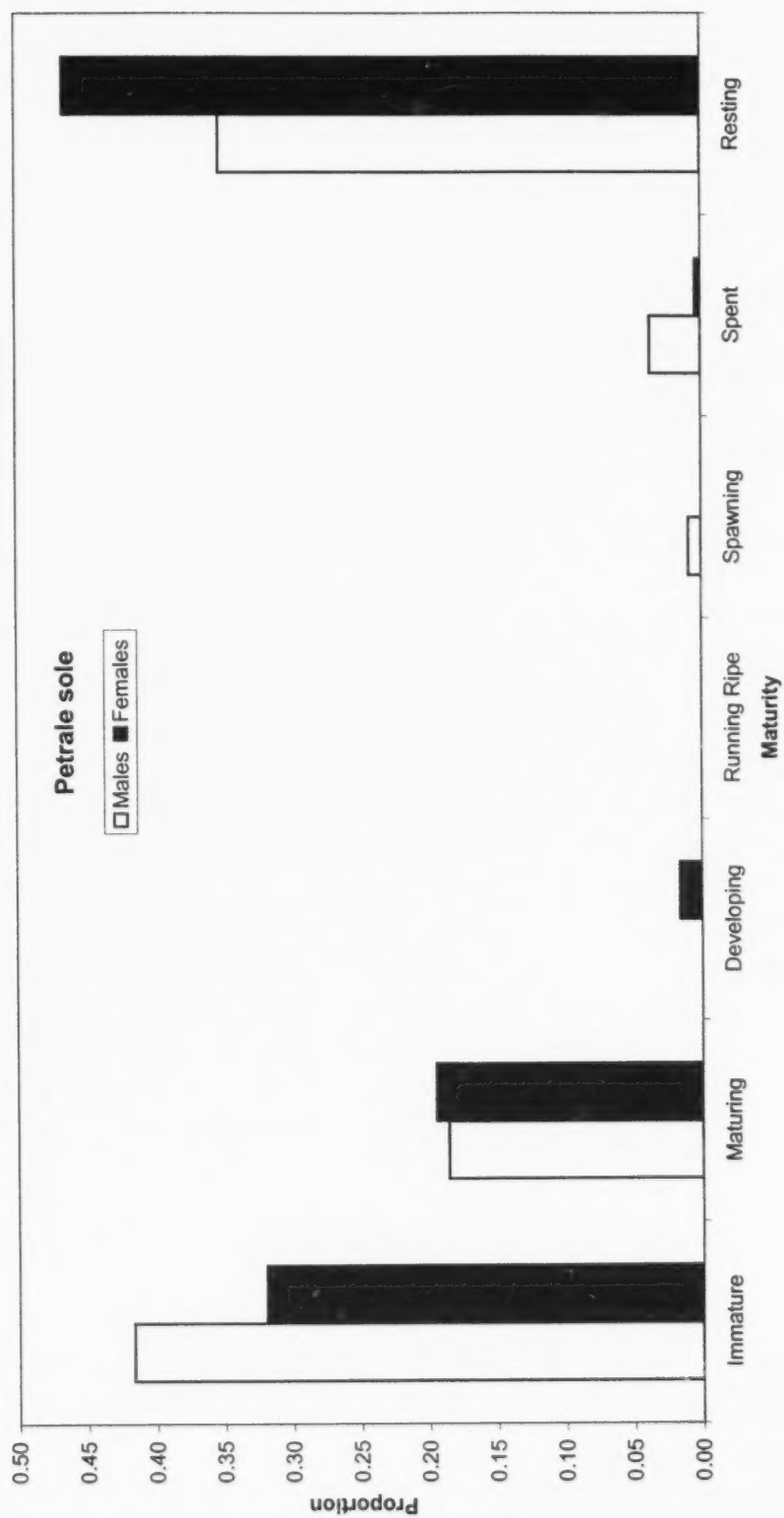


Figure 17. Stage of maturity for Petrale sole collected during the Hecate Strait multispecies survey in 2002.

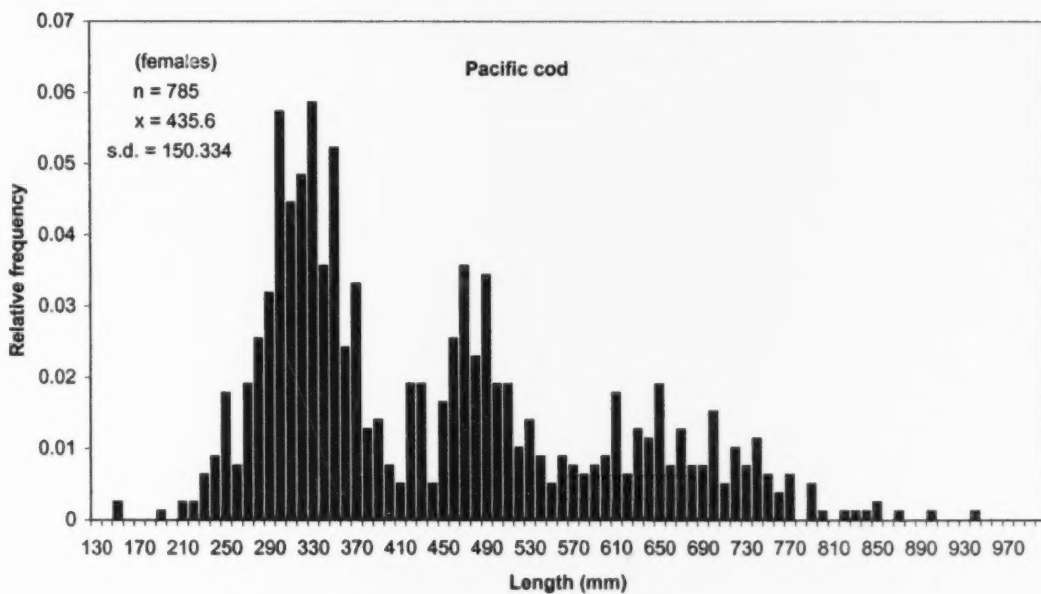
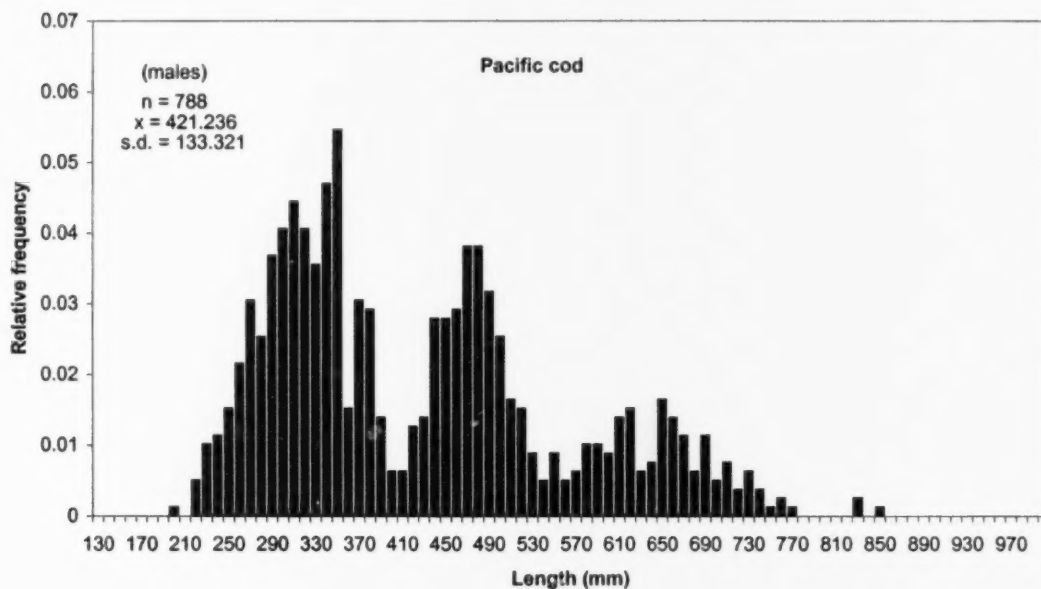


Figure 18. Length relative frequency distribution for males and females of Pacific cod collected during the Hecate Strait multispecies survey in 2002.

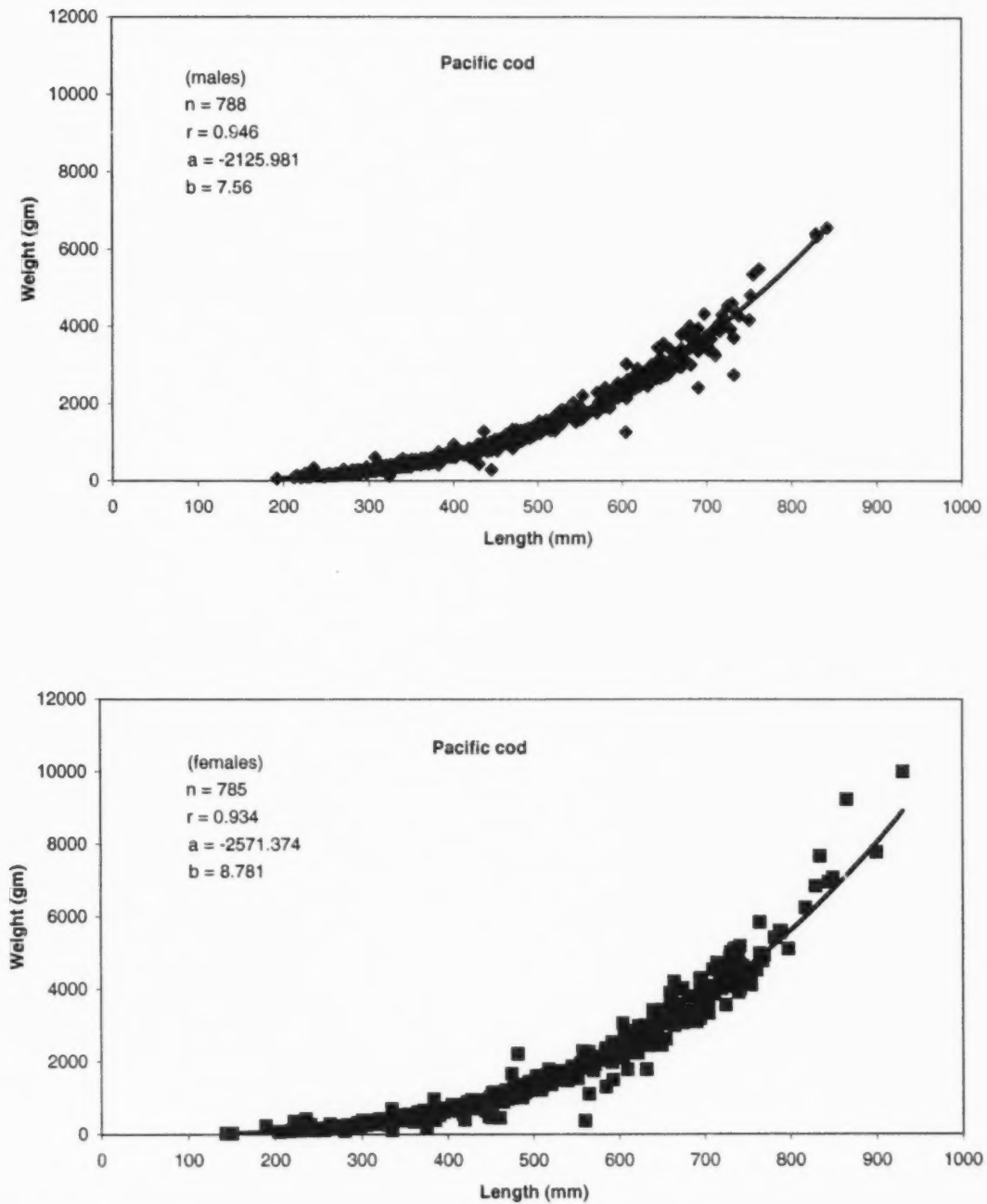


Figure 19. Length - weight relationship by sex for Pacific cod collected during the Hecate Strait multispecies survey in 2002.

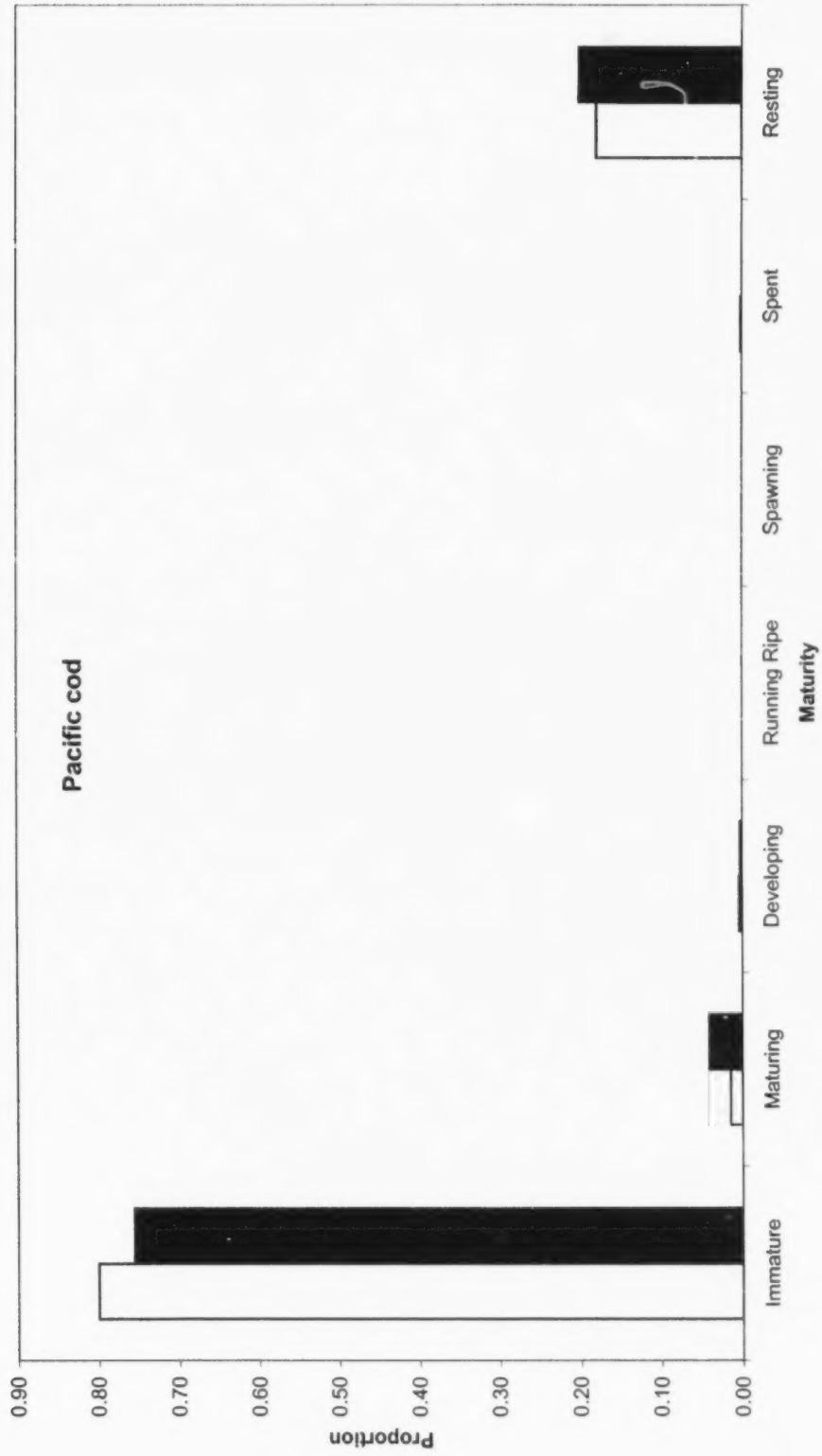


Figure 20. Stage of maturity for Pacific cod collected during the Hecate Strait multispecies survey in 2002.

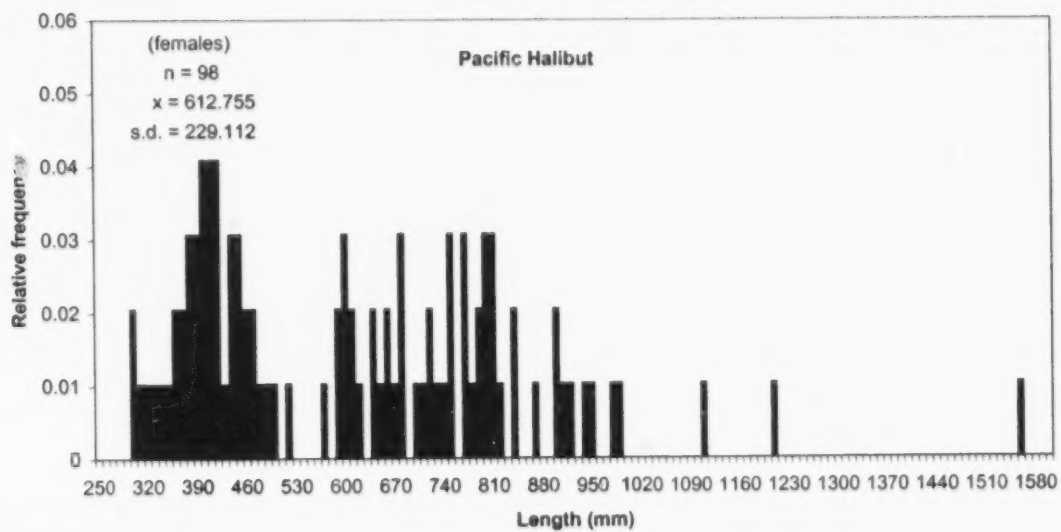
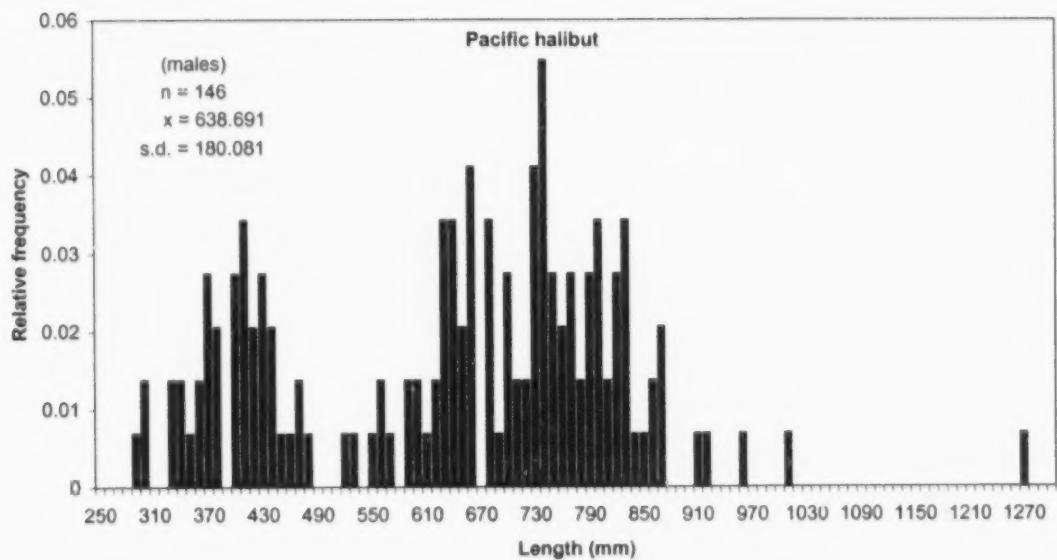


Figure 21. Length relative frequency distribution for males and females of Pacific Halibut collected during the Hecate Strait multispecies survey in 2002.

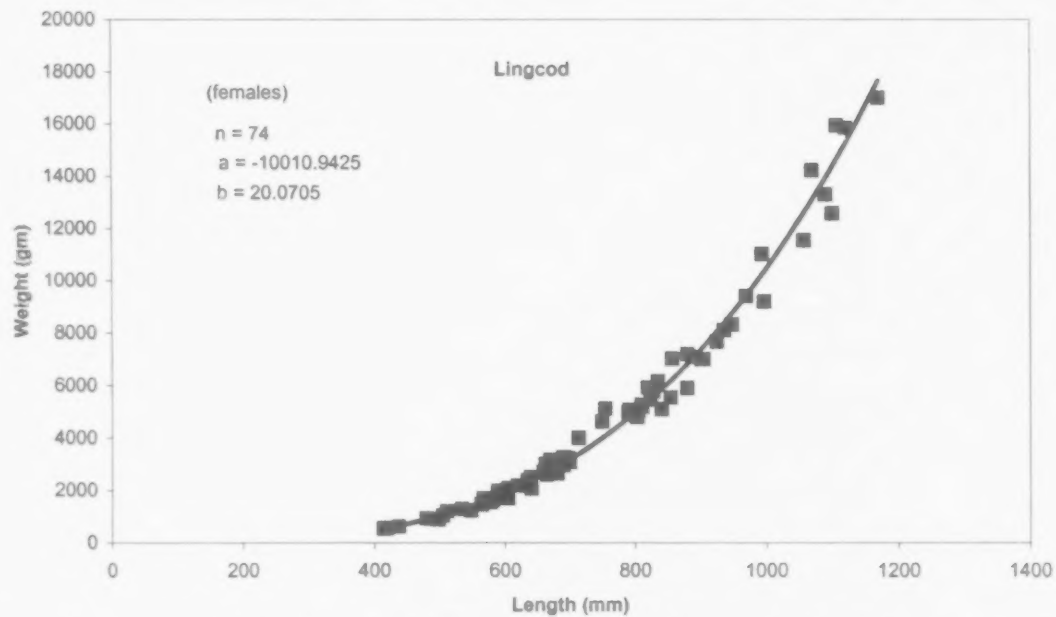
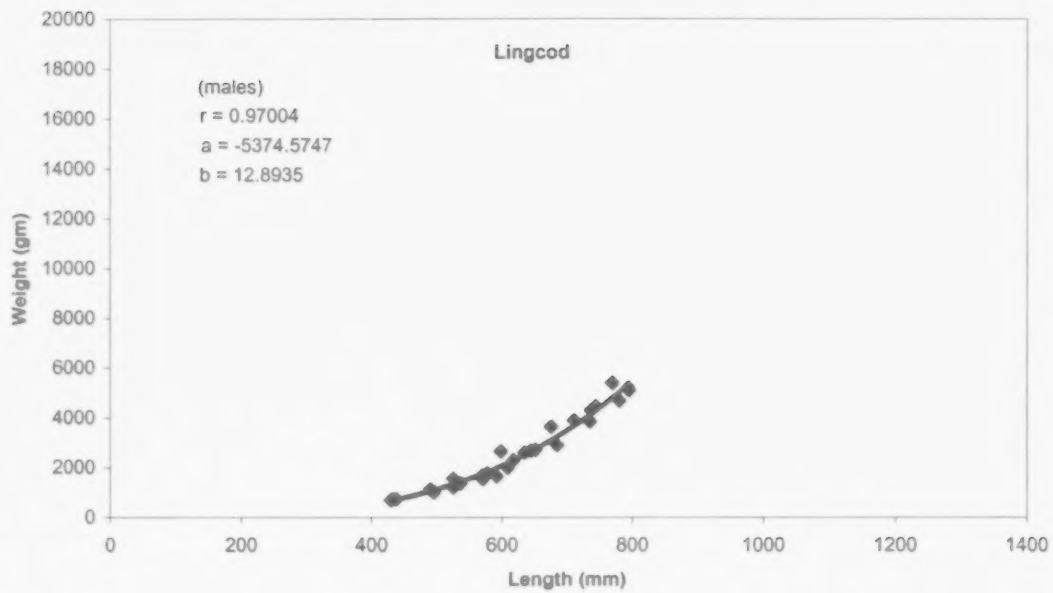


Figure 22. Length - weight relationship by sex for lingcod collected during the Hecate Strait multispecies survey in 2002.

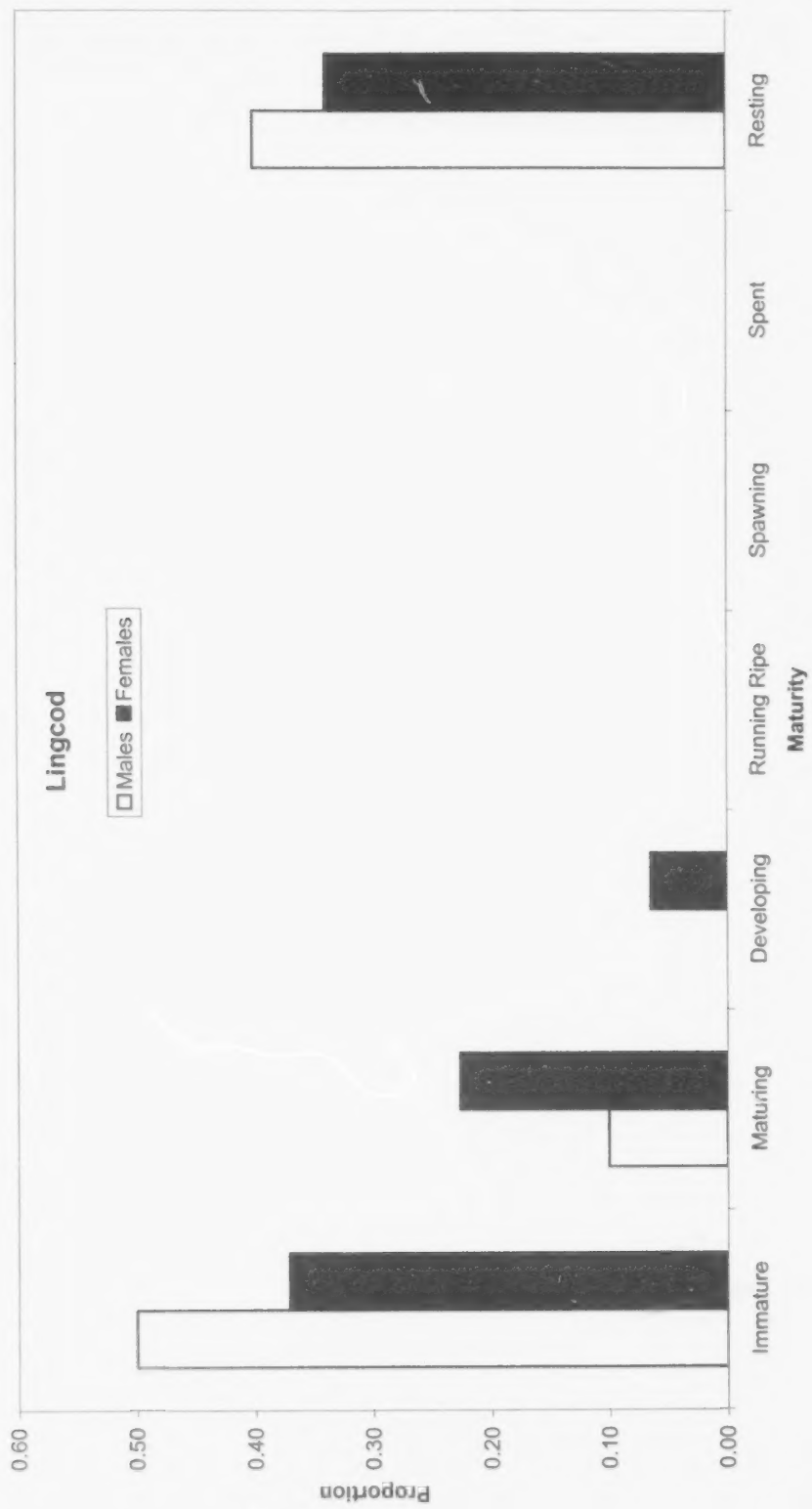


Figure 23. Stage of maturity for lingcod collected during the Hecate Strait multispecies survey in 2002.

Appendix 1. Criteria used for determining sole maturity stage.

Maturity stage	Code	Testes	Ovaries
Immature	1	Testes very small string-like and somewhat translucent or pinkish in colour.	Ovaries very small, translucent or pinkish in colour and somewhat gelatinous in texture.
Maturing	2	Testes enlarged, a distinct bulge evident but still translucent or pinkish in colour.	Ovaries relatively small, pinkish-yellow or cream in colour, granular in texture. No distinct eggs visible.
Developing	3	Testes enlarged, brown-white or white in colour, firm in texture.	Ovaries large, cream or yellow in colour, containing opaque eggs that can be distinguished by direct observation. Sex may be determined externally.
Running Ripe	4	Testes large, white and easily broken. No sperm evident.	Ovaries containing partly or wholly translucent eggs. Sex easily determined externally.
Spawning	5	Testes large, white and sperm evident.	Ovaries containing entirely translucent, mature ova. Eggs loose and will run from oviducts under slight pressure.
Spent	6	Testes flaccid, shrunken and yellow-brown in colour. Sperm ducts enlarged and a small amount of sperm may be present.	Ovaries large, flaccid and purple in colour; a few translucent eggs may be left. Ovarian membrane very bloodshot and sac-like.
Resting	7	Testes firm, small and yellow-brown in colour. Sperm ducts small.	Ovaries contracted and firm, pinkish-grey to cream-yellow in colour and may appear granular in texture but no distinct eggs are visible.

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	1		2		3		4	
Block:	B104		B103		B106		B107	
Date:	11-Jun-02		11-Jun-02		11-Jun-02		11-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	7:11	7:41	8:17	8:47	12:27	12:57	14:28	14:58
Latitude (Deg, Min):	54°11.89'	54°10.91'	54°10.57'	54°11.55'	54°13.76'	54°14.5'	54°16.9'	54°16.24'
Longitude (Deg, Min):	131°45.81'	131°47.82'	131°44.83'	131°42.88'	131°43.47'	131°40.9'	131°36.4'	131°38.57'
Duration (Minute):	30		30		30		30	
Direction (Deg, True):	225		065		065		245	
Distance (km):	5.0		5.4		6.1		5.2	
Boat Speed (km/h):	5.4		5.7		6.1		5.7	
Locality:Major/Minor	08 / 03		08 / 03		08 / 03		08 / 03	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		206.9		103.7		390.9		481.4
Butter sole				7.9				
C-o sole								
Curfin sole								
Dover sole		17.1		36.5		50		38
English sole		51.7		162.2		51		
Flathead sole		0.1				0.5		1
Pacific halibut		4.4		42.9				
Pacific sanddab		3.1		192.5		3		2
Petrale sole		11.3		4.5		1		1
Rex sole		29.2		30.8		47		27
Rock sole				1.5				
Sand sole				2.9				
Slender sole								
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio		11.9		4				2
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								0.1
Pacific ocean perch								0.1
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish						2		6.4
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish						1		
Selachii								
Big skate				3.5		12		
Longnose skate								
Sandpaper skate								2.9
Spiny dogfish		4.4		0.9		64		89
Spotted ratfish		85.6		53.8		158		49
Roundfish								
Bigfin eelpouts		0.1						
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts						0.5		
Eulachon								
Kelp greenling								
Lingcod				17.9				12.4
Northern ronquill								
Northern spear-nose poacher								
Pacific cod		19.1		7.9		15		7
Pacific herring				2.9				
Pacific sand lance								
Pacific tomcod		7.1		8.9				0.1
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish		0.1				0.5		0.1
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher								
Walleye pollock		91.8		107.7		18		11
Wolf eel								
Wrymouths								
Invertebrate		5.4		17.3		1.1		0
Total catch (kg)		549.3		810.2		815.5		730.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	5		6		7		8	
Block:	B103		B106		B201		B202	
Date:	11-Jun-02		11-Jun-02		12-Jun-02		12-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	15:41	16:14	18:22	18:52	7:40	8:11	9:05	9:35
Depth (Meters):	57	73	110	99	26	33	49	42
Latitude (Deg, Min):	54°14.81'	54°15.67'	54°15.28'	54°15.78'	54°14.2'	54°15.46'	54°15.67'	54°15.97'
Longitude (Deg, Min):	131°35.08'	131°33.04'	131°36.47'	131°33.87'	131°22.74'	131°25.91'	131°30.68'	131°27.83'
Duration (Minute):	33		30		31		30	
Direction (Deg, True):	054		080		310		083	
Distance (km):	4.8		5.4		5.2		6.1	
Boat Speed (km/h):	5.2		6.3		5.6		6.3	
Locality: Major/Minor	08 / 01		08 / 03		08 / 04		08 / 04	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder	268		229		7		3.8	
Butter sole								
C-o sole								
Curlfin sole								
Dover sole	37		147					
English sole	107		276		4		12	
Flathead sole			0.1					
Pacific halibut	63		9		38		7	
Pacific sanddab			0.1					
Petrable sole	2		9					
Rex sole	23		130		1			
Rock sole	0.1				8			
Sand sole			0.1		3		0.1	
Slender sole								
Speckled sandab								
Starry flounder	3				15		5	
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougeye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate			29		8		42	
Longnose skate	4.3		1.8					
Sandpaper skate								
Spiny dogfish	5		61		37		413.9	
Spotted ratfish	743		512		16		55.7	
Roundfish								
Bigfin eelpouts			0.1					
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod	88		13				39	
Northern ronquil								
Northern speamose poacher								
Pacific cod	10		13		3			
Pacific herring					8		4.5	
Pacific sand lance					0.1		0.1	
Pacific tomcod	5		0.1				0.1	
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.1						0.1	
Walleye pollock	5		3					
Wolf eel							3.3	
Wrymouths								
Invertebrate	0		4.3		8.1		0	
Total catch (kg)	1363.5		1437.6		156.2		586.6	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	9		10		11		12	
Block:	B204		B202		B205		B204	
Date:	12-Jun-02		12-Jun-02		12-Jun-02		12-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	10:10	10:30	12:22	12:42	13:35	13:55	15:42	16:02
Depth (Meters):	49	42	68	55	101	91	91	91
Latitude (Deg, Min):	54°16.7'	54°17.3'	54°17.89'	54°17.95'	54°18.3'	54°18.44'	54°19.66'	54°18.79'
Longitude (Deg, Min):	131°29.24'	131°27.25'	131°23.57'	131°21.08'	131°24.03'	131°21.8'	131°14.83'	131°15.7'
Duration (Minute):	20		20		20		20	
Direction (Deg, True):	065		084		080		204	
Distance (km):	4.6		4.6		4.3		3.3	
Boat Speed (km/h):	7		7		6.7		5.7	
Locality:Major/Minor	08 / 04		08 / 04		08 / 04		08 / 04	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		159		409		1059.5		1055.5
Butter sole		2		20				
C-o sole								
Curfin sole								
Dover sole				0.1		10		
English sole		57		8		36		125.5
Flathead sole								1.74
Pacific halibut						4		
Pacific sanddab				0.1				
Petrable sole								6
Rex sole						21		13.5
Rock sole								
Sand sole								
Slender sole								
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate		9.6				39		
Longnose skate								
Sandpaper skate								
Spiny dogfish		434.1				100		7.7
Spotted ratfish		106				149		
Roundfish								
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod		12		6.5				
Northern ronquil								
Northern spearnose poacher								
Pacific cod		351		7		30		12.6
Pacific herring		0.1				0.1		
Pacific sand lance				0.1		0.1		
Pacific tomcod								
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish						4		2.5
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher								
Walleye pollock		0.1				4		4
Wolf eel								
Wrymouths								
Invertebrate		2		0.1		2		1
Total catch (kg)		1136.9		450.9		1458.7		1230.04

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	13		14		15		16	
Block:	B207		A205		A206		A307	
Date:	12-Jun-02		16-Jun-02		13-Jun-02		13-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	17:32		18:02	19:05	19:25	7:10	7:40	8:53
Depth (Meters):	148	135	110		99	130	124	141
Latitude (Deg, Min):	54°19.59'	54°19.48'	54°20.7'	54°21.87'	54°29.29'	54°28.26'	54°26.51'	54°26.46'
Longitude (Deg, Min):	131°21.35'	131°19.41'	131°16.14'	131°15.5'	131°16.15'	131°14.23'	131°15.09'	131°12.5'
Duration (Minute):	30		20		30		30	
Direction (Deg, True):	100		018		133		090	
Distance (km):	4.1		3.9		5.2		5.2	
Boat Speed (km/h):	4.3		5.7		5.7		5.7	
Locality: Major/Minor	08 / 04		08 / 04		08 / 04		08 / 04	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		419.8		1374.2		214.1		238.9
Butter sole								
C-o sole								
Curlfin sole								
Dover sole		241.6		131.83		404		152.4
English sole				12.59		1.7		0.6
Flathead sole		2.7		35.42		19		2.4
Pacific halibut				39.35		17.4		16.5
Pacific sanddab								
Petrale sole				31.48		2.3		
Rex sole		32.8		64.93		57.8		33
Rock sole								
Sand sole								
Slender sole								
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio		4						
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								2.5
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								1.8
Shortspine thornyhead		1.4						1.4
Silvergray rockfish								
Widow rockfish		0.1						
Yelloweye rockfish								
Yellowtail rockfish				5.9				
Selachii								
Big skate								21
Longnose skate						2.2		
Sandpaper skate						1.4		2.6
Spiny dogfish						13.8		1
Spotted ratfish		178.7		17.71		9.5		4
Roundfish								
Bigfin eelpouts						13		7.8
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts						0.1		0.1
Eulachon						3.6		1.5
Kelp greenling								
Lingcod								
Northern ronquil								
Northern spearmose poacher								
Pacific cod		32		70.84		26.7		6.3
Pacific herring								
Pacific sand lance								
Pacific tomcod								
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish		41		15.74		13		43
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher								
Walleye pollock		3.3		0.1		35.2		8.8
Wolf eel								
Wymouths		0.1						
Invertebrate		1		0		0.6		1.9
Total catch (kg)		971.6		1800.09		835.4		547.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	17		18		19		20	
Block:	A307		A306		A305		A303	
Date:	13-Jun-02		13-Jun-02		13-Jun-02		13-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	10:30	11:00	13:04	13:24	14:43	15:06	16:34	16:56
Latitude (Deg, Min):	54°28.66'	54°27.14'	54°24.54'	54°23.65'	54°22.83'	54°21.8'	54°20.67'	54°21.35'
Longitude (Deg, Min):	131°8.53'	131°7.1'	131°6.7'	131°5.48'	131°5.75'	131°6.14'	131°11'	131°9.53'
Duration (Minute):		30		20		23		22
Direction (Deg, True):		150		127		190		055
Distance (km):		5.7		3.9		3.3		3.9
Boat Speed (km/h):		5.7		5.7				5.6
Locality: Major/Minor	08 / 04		08 / 04		08 / 04		08 / 04	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		164.3		105.5		259.4		126.7
Butter sole								0.1
C-o sole								
Curlfin sole								
Dover sole		226.5		207.9		136		10
English sole		1		88.9		68		180.1
Flathead sole		18.5		2		13.5		1
Pacific halibut		38				3.2		9.9
Pacific sanddab								0.1
Petrals sole								4
Rex sole		88.8		39.8		26.2		26
Rock sole				0.1				
Sand sole						0.1		0.1
Slender sole								
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch		0.9						
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate		7						
Longnose skate		13.6						
Sandpaper skate		1.2				1.8		
Spiny dogfish				2.3		1.6		
Spotted ratfish		8.2		60.4		243		181.4
Roundfish								
Bigfin eelpouts		3.3		0.6				
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon		1		2.9		37.3		
Kelp greenling								
Lingcod		1.7				5.2		3
Northern ronquil								
Northern spearmose poacher								
Pacific cod		69.4		33.4		53		0.3
Pacific herring								
Pacific sand lance								
Pacific tomcod								0.6
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish		233.2		68.7		21		
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher								
Walleye pollock		49		23		105.2		
Wolf eel								
Wrymouths								
Invertebrate		17.1		1		0.3		0
Total catch (kg)		942.7		636.5		974.8		543.3

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	21		22		23		24	
Block:	B302		B306		B306		B301	
Date:	13-Jun-02		14-Jun-02		14-Jun-02		14-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	18:10		18:40	7:08	7:31	9:14	11:06	11:36
Depth (Meters):	51		51	119	117	101	26	20
Latitude (Deg, Min):	54°17.63'	54°17.52'	54°16.81'	54°17.88'	54°17.43'	54°18.28'	54°14.9'	54°13.23'
Longitude (Deg, Min):	131°9.2'	131°7.12'	131°3.38'	131°4.46'	131°4.4'	131°5.2'	131°10.95'	131°10.24'
Duration (Minute):		30		23		20		30
Direction (Deg, True):		097		340		330		164
Distance (km):		4.3		4.1		3.3		
Boat Speed (km/h):		4.6		5.9		5.2		6.3
Locality: Major/Minor		08 / 04		08 / 04		08 / 04		08 / 04
Remarks:		USABLE		USABLE		USABLE		USABLE
Flatfish								
Arrowtooth flounder		41.6		539.61		240.28		
Butter sole		10						0.1
C-o sole								
Curfin sole								
Dover sole				471.17		489.46		4.7
English sole		14.5		17.37		66.74		215.7
Flathead sole				3.69		0.1		
Pacific halibut		4		104		12		29.5
Pacific sanddab								
Petrale sole								
Rex sole		1.3		47.38		163.15		2
Rock sole		0.2						37
Sand sole		0.1						39.1
Slender sole								
Speckled sandab								0.1
Starry flounder								20
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate		77.6				39.2		22.5
Longnose skate								
Sandpaper skate								
Spiny dogfish				5.26				3.1
Spotted ratfish		107.5		1213.46		1429.81		219
Roundfish								
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod				19				
Northern ronquil								
Northern spear-nose poacher								
Pacific cod				34.9		37.3		10.7
Pacific herring								
Pacific sand lance								
Pacific tomcod						0.1		
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher								
Walleye pollock				28.43		17.06		6.1
Wolf eel								
Wrymouths								
Invertebrate		21		10.82		0		13.2
Total catch (kg)		277.8		2495.09		2495.2		622.8

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V Viking Storm, June 10 - 28, 2002.

Set:	25		26		27		28	
Block:	B301		B306		B304		B301	
Date:	14-Jun-02		14-Jun-02		14-Jun-02		14-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	13:04	13:34	14:29	14:49	16:51	17:13	18:11	18:31
Latitude (Deg, Min):	26	29	57	62	86	88	26	29
Longitude (Deg, Min):	54°12.4'	54°10.9'	54°14'	54°13.08'	54°11.75'	54°10.75'	54°10.5'	54°9.67'
Duration (Minute):	131°10.15'	131°8.8'	131°4.3'	131°2.47'	131°4.14'	131°4.26'	131°5.16'	131°5'
Direction (Deg, True):	30	20	20	22	185	177	20	177
Distance (km):	150	185	185	3.5	2.8	5	08 / 04	08 / 04
Boat Speed (km/h):	5.9	3.1	3.1	3.5	2.8	5	08 / 04	08 / 04
Locality: Major/Minor	6.5	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Remarks:	08 / 04	08 / 04	08 / 04	08 / 04	08 / 04	08 / 04	08 / 04	08 / 04
Remarks:	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE
Flatfish								
Arrowtooth flounder				92.5		425.84		
Butter sole		0.1		3				
C-o sole								
Curlfin sole								
Dover sole				35.5		1124.23		1.3
English sole	27			139.2		1098.68		
Flathead sole				1.1		68.14		
Pacific halibut	17			4.3				4.5
Pacific sanddab				0.1				
Petrale sole				2				
Rex sole				571.3		1483.64		
Rock sole	17			4.7				
Sand sole	37.5			13				1.5
Slender sole								
Speckled sandab								
Starry flounder	0.1			3.6				
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate	8			30.3		2		
Longnose skate				4.8				
Sandpaper skate								
Spiny dogfish				1.5				
Spotted ratfish	296.5			21.9		442.88		0.1
Roundfish								
Bigfin eelpouts								
Bluespotted poacher								
Brown Irish lord								
Buffalo sculpin								
Chinook salmon	2			1				
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod						14		
Northern ronquil								
Northern spear-nose poacher								
Pacific cod	10.7			37.3		51.7		0.6
Pacific herring	4			0.1		5.62		0.1
Pacific sand lance				0.1				
Pacific tomcod	0.1			8.9		17.03		
Poachers								
Pricklebacks								
Red Irish lord								
Roughback sculpin								
Sablefish				5.4		25.55		
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.1							
Walleye pollock	0.1			11.8		136.27		
Wolf eel								
Wrymouths								
Invertebrate	47.3			27.28		104.52		27.5
Total catch (kg)	467.5			1020.88		5000.1		35.6

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	29	30	31	32
Block:	C305	C201	C201	C301
Date:	15-Jun-02	15-Jun-02	15-Jun-02	15-Jun-02
	Start	Start	Start	Start
Time:	7:11	7:26 8:47	10:55	11:15 12:27
Depth (Meters):	101	101 29	26	27 27
Latitude (Deg, Min):	54°6.4'	54°6.73'	54°1.36'	54°5.5'
Longitude (Deg, Min):	131°3.07'	131°16.37'	131°20.05'	131°19.27'
Duration (Minute):	15	30	20	30
Direction (Deg, True):	334	060	035	180
Distance (km):	2.4	5.2	3.3	5.2
Boat Speed (km/h):	5.2	5.2	5.2	5.4
Locality:Major/Minor	08 / 04	08 / 04	08 / 04	08 / 04
Remarks:	USABLE	USABLE	USABLE	USABLE
Flatfish				
Arrowtooth flounder	403			
Butter sole		33.5	3	1
C-o sole		0.1		
Curlfin sole		0.1		
Dover sole	301.5			
English sole	91.5	411.3	9.7	23
Flathead sole	6			
Pacific halibut	7	8.1	18.1	4
Pacific sanddab				
Petrale sole	2			
Rex sole	144.3	10		
Rock sole	1	42.7	8	32
Sand sole		38.6	6	30
Slender sole				
Speckled sandab				
Starry flounder				
Rockfish				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch	0.1			
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
Selachii				
Big skate		42.6	5	
Longnose skate				
Sandpaper skate				
Spiny dogfish	17		4.7	
Spotted ratfish	145.9	30.5	8.3	4
Roundfish				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts	0.1			
Eulachon	1	0.1	0.1	
Kelp greenling				
Lingcod				
Northern ronquil				
Northern spearfished poacher				
Pacific cod	25.4	3.3	3.2	30.5
Pacific herring		3.3	8	0.1
Pacific sand lance				0.1
Pacific tomcod	9	13.5	229.1	3
Poachers				
Pricklebacks		0.1	1	2
Red irish lord				
Roughback sculpin				
Sablefish	4	1.2	1	
Sculpins		0.1		
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher		0.1	1	1
Walleye pollock	78.3			
Wolf eel				
Wrymouths				
Invertebrate	4.8	95.9	6	89.7
Total catch (kg)	1241.9	735.1	312.2	220.4

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V Viking Storm, June 10 - 28, 2002.

Set:	33		34		35		36	
Block:	C304		D301		D201		D302	
Date:	15-Jun-02		15-Jun-02		15-Jun-02		15-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	14:17	14:37	15:39	15:59	16:49	17:14	18:13	18:33
Depth (Meters):	86	82			29	27	46	44
Latitude (Deg, Min):	54°3.75'	54°2.75'	53°59.93'	53°59.86'	53°57.6'	53°56.65'	53°58.87'	53°58.13'
Longitude (Deg, Min):	131°3.7'	131°4'	131°6.73'	131°8.32'	131°16.53'	131°17.35'	131°7.9'	131°6.7'
Duration (Minute):		20		20		25		20
Direction (Deg, True):		190		264		207		135
Distance (km):		3.5		3.3		3.7		3.7
Boat Speed (km/h):		5.6		5		5		5.6
Locality: Major/Minor	08 / 04		08 / 04		08 / 04		08 / 04	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		102.35		2		0.1		1.6
Butter sole		0.1						0.1
C-o sole								
Curfin sole								
Dover sole		23.39						
English sole		669.64		7		2.4		2
Flathead sole		18.71		0.1		1		
Pacific halibut		1		1.4		1.25		9
Pacific sanddab				0.5				
Petrale sole				0.1				
Rex sole		207.62						
Rock sole				11		51		6
Sand sole		5.85		12		15		17
Slender sole								
Speckled sandab						0.1		0.1
Starry flounder								
Rockfish						0.1		
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii						1.3		38
Big skate								
Longnose skate								
Sandpaper skate								
Spiny dogfish		5.85				1		1
Spotted ratfish		96.5		6		168		54
Roundfish								
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin						3		
Chinook salmon								
Eelpouts								
Eulachon		0.1		0.1		1		
Kelp greenling								
Lingcod								
Northern ronquill								
Northern spearnose poacher								
Pacific cod		587.76		1		4		1
Pacific herring		0.1		1		0.5		2
Pacific sand lance						0.1		0.1
Pacific tomcod		4.68		0.1		11		0.1
Poachers								
Pricklebacks		0.1		0.1		0.1		0.1
Red irish lord								
Roughback sculpin								
Sablefish		2.92				1		
Sculpins						3.5		0.1
Shiner perch						0.1		
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher		0.1				0.1		0.1
Walleye pollock		40.94		1				0.1
Wolf eel								
Wrymouths								
Invertebrate		47.19		17.6		17.7		8.4
Total catch (kg)		1814.9		61		283.35		140.8

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V Viking Storm, June 10 - 28, 2002.

Set:	37	38	39	40
Block:	D304	E202	E301	E302
Date:	15-Jun-02	16-Jun-02	16-Jun-02	16-Jun-02
	Start	Finish	Start	Finish
Time:	19.07	19.27	7.08	7.38
Depth (Meters):	82	80	44	37
Latitude (Deg, Min):	53°57.2'	53°56.34'	53°47.7'	53°46.28'
Longitude (Deg, Min):	131°2.17'	131°1.47'	131°16.55'	131°15.6'
Duration (Minute):	20	30	30	20
Direction (Deg, True):	155	156	180	140
Distance (km):	3.3	5.4	5.4	3.9
Boat Speed (km/h):	5.2	5.6	5.7	6.3
Locality: Major/Minor	08 / 04	08 / 01	08 / 05	08 / 05
Remarks:	USABLE	USABLE	USABLE	USABLE
Flatfish				
Arrowtooth flounder	183.9	14	1	0.1
Butter sole		0.1		0.1
C-o sole				
Curlfin sole		0.1	1	0.1
Dover sole	8	4		
English sole	31	22.8	52.8	5.7
Flathead sole	158.7	0.1		
Pacific halibut	14	10.6	10.5	18.9
Pacific sanddab	15.5	3		0.1
Petrale sole		1		
Rex sole	28.7	1		
Rock sole	27.5	183.7	30.4	7.9
Sand sole	4.5	26	16.4	2.5
Slender sole				
Speckled sandab				0.1
Starry flounder				
Rockfish				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish	2			
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
Selachii				
Big skate		78.7	3	
Longnose skate		10		
Sandpaper skate				
Spiny dogfish		13.7	2.4	
Spotted ratfish	8.6	271.1	48.5	49.7
Roundfish				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord		0.1		
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod				
Northern ronquill		1		
Northern spearose poacher				
Pacific cod	14.6	5	1.44	1.4
Pacific herring	0.1	16	2	
Pacific sand lance	0.1			
Pacific tomcod	3	32	2	0.1
Poachers		0.1		0.1
Pricklebacks	0.1	1	1.7	0.1
Red irish lord				
Roughback sculpin				
Sablefish	1			
Sculpins		7	1	0.1
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				
Walleye pollock	71.9	1		
Wolf eel				
Wynmouths				
Invertebrate	1	28	9.5	6.5
Total catch (kg)	574.2	731.1	183.64	93.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	41		42		43		44	
Block:	D404		D404		D303		A304	
Date:	16-Jun-02		16-Jun-02		16-Jun-02		16-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	12:31	12:51	13:58		14:18	15:25	15:45	18:48
Depth (Meters):	86	82	68		68	59	71	82
Latitude (Deg, Min):	53°52.65'	53°52.04'	53°55'	53°54.43'	53°54.75'	53°54.13'	54°19.94'	54°20.68'
Longitude (Deg, Min):	130°53.2'	130°51.57'	130°55.17'	130°53.54'	131°3.83'	131°3.39'	131°7.1'	131°7.18'
Duration (Minute):		20		20		20		15
Direction (Deg, True):		124		123		127		356
Distance (km):		3.7		3.7		3.5		2.6
Boat Speed (km/h):		5.7		5.7		5.7		5.2
Locality:Major/Minor		08 / 04		08 / 04		08 / 04		08 / 04
Remarks:		USABLE		USABLE		USABLE		USABLE
Flatfish								
Arrowtooth flounder		159.2		566.8		69.7		70.7
Butter sole						0.1		
C-o sole								
Curtfin sole				0.1				
Dover sole		6		13		4.4		41.6
English sole		20.6		64.1		184.6		105
Flathead sole		203.2		7.9		0.5		5
Pacific halibut				4.9		13.8		2.3
Pacific sanddab		7.8		96.8		140.5		1.5
Petrale sole				0.6		9.9		0.5
Rex sole		29		21.5		17		75.3
Rock sole		4.5		10.7		11.4		
Sand sole		1		1.4		20		
Slender sole		3.6				0.5		0.1
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish				4.1				
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate								
Longnose skate								
Sandpaper skate								
Spiny dogfish						3		3.8
Spotted ratfish				12.8		18.8		202.48
Roundfish								
Bigfin eelpouts								0.1
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling				2.6				
Lingcod		1.3						
Northern ronquill								
Northern spear-nose poacher								
Pacific cod		10.5		23.5		14		7.1
Pacific herring		0.1		0.1		1		0.1
Pacific sand lance								
Pacific tomcod		0.1				51.3		0.1
Poachers								
Pricklebacks		0.1				0.1		
Red irish lord								
Roughback sculpin								
Sablefish		282		52		4		0.5
Sculpins		0.1				0.1		0.1
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher		0.1		1				0.1
Walleye pollock		55.1		242.1		143.7		9
Wolf eel								
Wrymouths								
Invertebrate		1.3		11.9		0.6		6.7
Total catch (kg)		785.6		1137.9		709		532.08

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	45		46		47		48	
Block:	E405		E402		E406		E403	
Date:	18-Jun-02		18-Jun-02		18-Jun-02		18-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	7:09	7:29	8:45	9:29	10:31	10:51	12:33	13:03
Depth (Meters):	102	104	51	51	113	113	68	68
Latitude (Deg, Min):	53°45.7'	53°45.05'	53°42.75'	53°42'	53°45.54'	53°44.58'	53°42.87'	53°41.35'
Longitude (Deg, Min):	130°51.1'	130°50.03'	130°52.16'	130°50.06'	130°49'	130°48.13'	130°48.26'	130°46.83'
Duration (Minute):	20		35		20		30	
Direction (Deg, True):	140		122		150		152	
Distance (km):	3.3		5.2		3.7		5.7	
Boat Speed (km/h):	5.2		5.6		5.9		6.3	
Locality:Major/Minor	08 / 05		08 / 05		08 / 05		08 / 05	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder	66.8		38.8		76.5		93.4	
Butter sole							0.1	
C-o sole								
Curlfin sole			2.8				0.1	
Dover sole	83.5		2		250.1		16.1	
English sole	41.3		13.2		4.2		104.7	
Flathead sole	46.8		2.4		8.9		0.1	
Pacific halibut			35.5		0.5		3.4	
Pacific sanddab					0.1		60.3	
Petrale sole	6.1		7.7		1.3		2	
Rex sole	171.3		17		194.9		25.3	
Rock sole			29		2		2.4	
Sand sole			5.8				1	
Slender sole	5.1		2		10.4		1.2	
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish			4.7					
Bocaccio			3.3					
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch	0.1							
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate			4.7					
Longnose skate	12.3		3.3					
Sandpaper skate								
Spiny dogfish							3.8	
Spotted ratfish	5.4		94.7		23		10.3	
Roundfish								
Bigfin eelpouts	4.7		1		2			
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon	4.8		0.1		8.2			
Kelp greenling								
Lingcod								
Northern ronquil								
Northern spearnose poacher								
Pacific cod	14.3		178.8		22		31.5	
Pacific herring			0.1		0.1		2.3	
Pacific sand lance			0.1		0.1			
Pacific tomcod	1		2.5		0.1		61.5	
Poachers								
Pricklebacks			0.5					
Red irish lord								
Roughback sculpin								
Sablefish	4.6				19.8		1	
Sculpins			0.1					
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.5				0.1			
Walleye pollock	6.8				7.2		300.5	
Wolf eel								
Wrymouths								
Invertebrate	2.9		5.5		8.6		5.9	
Total catch (kg)	478.3		447.6		640.1		726.9	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	49		50		51		52	
Block:	E404		E407		F403		F403	
Date:	18-Jun-02		18-Jun-02		18-Jun-02		18-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	14:39	14:54	16:19	16:39	17:50	18:10	18:56	19:16
Depth (Meters):	82	82	128	134	64	64	53	53
Latitude (Deg, Min):	53°41.72'	53°40.87'	53°42.65'	53°43.84'	53°37.1'	53°36.37'	53°33.04'	53°39.94'
Longitude (Deg, Min):	130°46.43'	130°46.22'	130°44.65'	130°44.93'	130°49.35'	130°50.35'	130°48.17'	130°48.05'
Duration (Minute):	15		20		20		20	
Direction (Deg, True):	172		351		218		037	
Distance (km):	3.0		3.7		3.1		3.7	
Boat Speed (km/h):	5.7		6.1		5		5.7	
Locality: Major/Minor	08 / 05		08 / 05		08 / 05		08 / 05	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		54.9		221.1		37		3
Butter sole						0.1		
C-o sole								1.4
Curlfin sole						6		
Dover sole		31.2		305.8		95.3		43.6
English sole		23		4.6				
Flathead sole		38.4		10.8		1.1		
Pacific halibut								11
Pacific sanddab		1		0.1		61.4		1
Petrale sole				0.5				1
Rex sole		70.6		218.9		14.4		0.1
Rock sole		1				20.6		18.5
Sand sole				0.5		1		2.8
Slender sole				6.8				
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch				0.1				
Pygmy rockfish						4.1		
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate								
Longnose skate				2.15				
Sandpaper skate								
Spiny dogfish		3.2		2		7		2.2
Spotted ratfish		1.5		10.3		0.1		133.9
Roundfish								
Bigfin eelpouts				0.1		0.1		0.1
Bluespotted poacher								
Brown irish lord						0.1		
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon				0.5				
Kelp greenling						4.2		
Lingcod						1.5		
Northern ronquil								
Northern spear-nose poacher								
Pacific cod				8.9		5		12.9
Pacific herring		0.1		0.1				0.1
Pacific sand lance		0.1						
Pacific tomcod		38.4		0.1		54.6		18.9
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish		1.4		21				1
Sculpins				0.1				
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher				0.1				0.1
Walleye pollock		35.7		2.6		7.2		
Wolf eel								
Wrymouths								
Invertebrate		0.2		0.7		39.1		12.9
Total catch (kg)		300.7		817.85		360.2		284.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	53		54		55		56	
Block:	F404		F302		F302		F301	
Date:	19-Jun-02		19-Jun-02		19-Jun-02		19-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	7:09	7:29	8:49	9:09	10:54	11:20	12:44	13:14
Depth (Meters):	91	102			60	51	26	31
Latitude (Deg, Min):	53°36.87'	53°37.4'	53°38.28'	53°38.77'	53°34.8'	53°33.41'	53°31.93'	53°30.51'
Longitude (Deg, Min):	130°46.64'	130°46.44'	130°59.91'	130°58.55'	131°6.9'	131°7'	131°14.58'	131°12.73'
Duration (Minute):		20		20		26		30
Direction (Deg, True):		007		055		180		140
Distance (km):		3.7		3.3				6.3
Boat Speed (km/h):		5.9		5.4		5.4		6.7
Locality:Major/Minor		08 / 05		08 / 05		08 / 05		08 / 01
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		102		9.8		2		0.1
Butter sole						0.5		
C-o sole								
Curlfin sole				1		1		0.1
Dover sole		122.6		3.4		2		
English sole		33		0.1		37.2		1.2
Flathead sole		31		1.8				
Pacific halibut		0.1		5		8.2		3.6
Pacific sanddab						76.6		
Petrale sole		6		1.5				
Rex sole		242.8		7.5				
Rock sole		0.1		10		49.7		42.8
Sand sole		0.1				14.6		1.3
Slender sole		4		1				
Speckled sandab								0.1
Starry flounder								2.3
Rockfish								
Black rockfish								
Bocaccio		5.2						
Canary rockfish								
Copper rockfish				4				
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish				17				
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate						8		
Longnose skate								
Sandpaper skate								
Spiny dogfish		25.4		2		2		6
Spotted ratfish		12.7		328.8		10		653.1
Roundfish								
Bigfin eelpouts		1.8		0.1		0.1		
Bluespotted poacher								
Brown irish lord				0.1				
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon		0.1		0.1		0.1		
Kelp greenling				3.6				
Lingcod				8		9.4		
Northern ronquill						0.1		
Northern spearmose poacher								
Pacific cod		4.3		1.4		7.5		0.5
Pacific herring						1.2		
Pacific sand lance				0.1				0.1
Pacific tomcod		1.7		0.1		40.7		
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish		23.1		1		0.1		
Sculpins				0.1		2		0.1
Shiner perch								
Snake prickleback						0.1		
Spotfin sculpin								
Sturgeon poacher		0.1		0.1				0.1
Walleye pollock		16.7						0.1
Wolf eel								
Wrymouths								
Invertebrate		2		167.5		3.6		6.7
Total catch (kg)		634.8		575.1		276.7		718.2

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	57	58	59	60
Block:	G201	F302	G405	F404
Date:	19-Jun-02	19-Jun-02	19-Jun-02	19-Jun-02
	Start	Start	Start	Start
Time:	14:15	14:31:15:54	16:24:17:43	18:03:18:51
Depth (Meters):	29	22	42	106
Latitude (Deg, Min):	53°27.13'	53°28.52'	53°30.35'	53°27.95'
Longitude (Deg, Min):	131°19.7'	131°18.1'	131°9.24'	130°52.08'
Duration (Minute):	20	30	20	29
Direction (Deg, True):	121	173	040	010
Distance (km):	3.9		3.7	
Boat Speed (km/h):	6.1	5	5.7	
Locality:Major/Minor	08 / 01	08 / 01	08 / 05	08 / 05
Remarks:	USABLE	USABLE	USABLE	UNUSABLE
Flatfish				
Arrowtooth flounder	0.1	0.1	122.6	
Butter sole				
C-o sole				
Curfin sole	0.1	0.1		
Dover sole	0.1		51.2	
English sole	1	0.1	22.5	
Flathead sole			1	
Pacific halibut	10.4	4.9		
Pacific sanddab	0.1	16.5	0.5	
Petrale sole			1.7	
Rex sole		0.1	80.4	
Rock sole	67	69.9	3.8	
Sand sole	4	4.3	0.1	
Slender sole			5.1	
Speckled sandab				
Starry flounder	13.6			
Rockfish				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
Selachii				
Big skate		69		
Longnose skate				
Sandpaper skate				
Spiny dogfish	3	0.1	6.3	
Spotted ratfish	180.6	21.1	11.6	
Roundfish				
Bigfin eelpouts			1	
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon		0.1		
Kelp greenling				
Lingcod		15.9		
Northern ronquil				
Northern speamose poacher	0.1			
Pacific cod	3	31	10.7	
Pacific herring		69.5	1	
Pacific sand lance	0.1	0.1		
Pacific tomcod		0.1		
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin	0.1	0.1		
Sablefish			1	
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher	0.1	0.1	0.5	
Walleye pollock	0.1	0.1	0.1	
Wolf eel				
Wrymouths				
Invertebrate	12.6	19.2	7.6	0
Total catch (kg)	296.1	322.4	328.7	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	61		62		63		64	
Block:	F404		G406		G301		G407	
Date:	20-Jun-02		20-Jun-02		20-Jun-02		20-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
7:11		7:31	9:16	9:33	11:10	11:4	12:36	13:04
Depth (Meters):	88	90	126	119	31	31	93	95
Latitude (Deg, Min):	53°34.7'	53°35.85'	53°27.34'	53°26.68'	53°25.86'	53°25.6'	53°22.3'	53°21.21'
Longitude (Deg, Min):	130°47.88'	130°47.28'	130°50.74'	130°51.77'	131°11.73'	131°9.36'	130°58.5'	130°56.81'
Duration (Minute):	20		17		31		28	
Direction (Deg, True):	015		220		100		140	
Distance (km):	3.9		3.0		4.8		5.0	
Boat Speed (km/h):	6.3		5.6		5		5.6	
Locality:Major/Minor	08 / 05		08 / 05		08 / 01		07 / 06	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder		125.2		68.4		4.4		178.4
Butter sole								
C-o sole								
Curfin sole								
Dover sole		12.7		26.7				29.9
English sole		225.1		5.3		1.2		26.1
Flathead sole		32.5		4				27.6
Pacific halibut		3.8				37.4		
Pacific sanddab								
Petrale sole		3.7						0.5
Rex sole		41.2		88.8				110.8
Rock sole		1.9				34.2		1.1
Sand sole		0.1				2.3		0.1
Slender sole		1.2		2				1.9
Speckled sandab								
Starry flounder						6.2		
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish				1				
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish				8.1				
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate						3.3		
Longnose skate								
Sandpaper skate								
Spiny dogfish		11.1		5.5		7.9		13.8
Spotted ratfish		5.8		15.5		25.8		18.1
Roundfish								
Bigfin eelpouts		0.1		1		0.1		
Bluespotted poacher								
Brown irish lord						0.1		
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon				0.1		0.1		
Kelp greenling								
Lingcod		1.2						
Northern ronquil								
Northern spear-nose poacher								
Pacific cod		1.1				1.7		34.7
Pacific herring		1.8				0.5		0.1
Pacific sand lance						0.1		
Pacific tomcod		16.5		0.1		0.1		0.1
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin						0.5		
Sablefish		3		1		0.1		2.1
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher		0.5		0.1				0.1
Walleye pollock		66.7		0.1		0.1		0.1
Wolf eel								
Wrymouths								
Invertebrate		3.9		1.5		11.9		0.5
Total catch (kg)		559.1		229.2		138		446

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	65		66		67		68	
Block:	G302		G304		H201		H301	
Date:	20-Jun-02		20-Jun-02		20-Jun-02		20-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	14:15	14:45	16:10	16:27	17:34	17:58	19:10	19:11
Depth (Meters):	53	53	80	80	71	71	29	29
Latitude (Deg, Min):	53°22.65'	53°23.47'	53°20.6'	53°21.4'	53°17.6'	53°18.73'	53°18.73'	53°18.73'
Longitude (Deg, Min):	131°4.38'	131°2.6'	131°0.1'	131°0.31'	131°1.84'	131°1.38'	131°16'	131°16'
Duration (Minute):	30		17		24		0	
Direction (Deg, True):	050		352		017		134	
Distance (km):	4.6		2.8		3.9		0.0	
Boat Speed (km/h):	5		5		5.4			
Locality: Major/Minor	07 / 06		07 / 06		07 / 06		07 / 02	
Remarks:	USABLE		USABLE		USABLE		UNUSABLE	
Flatfish								
Arrowtooth flounder	6		481.66		18			
Butter sole								
C-o sole								
Curlfin sole	0.1				0.6			
Dover sole			11					
English sole	29.4		99.7		206.4			
Flathead sole	1.2							
Pacific halibut	0.4				1.8			
Pacific sanddab			22.8		37.8			
Petrale sole			9		0.7			
Rex sole	1.9		147.6		6.4			
Rock sole	60.2		2.2		4.7			
Sand sole	8		0.1		0.1			
Slender sole	0.1		0.1					
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio					4			
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate	16							
Longnose skate								
Sandpaper skate								
Spiny dogfish	182		8		32			
Spotted ratfish	48.8		14.6		25.3			
Roundfish								
Bigfin eelpouts	0.1							
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling	0.1							
Lingcod	7.8				17			
Northern ronquil								
Northern spearnose poacher								
Pacific cod	165		9.4		0.1			
Pacific herring	0.1		0.1					
Pacific sand lance	0.1							
Pacific tomcod	0.1		0.8		2			
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish			0.5		1			
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher			0.1					
Walleye pollock			0.6		0.1			
Wolf eel								
Wrymouths								
Invertebrate	4.4		10.1		7.8		0	
Total catch (kg)	531.8		818.36		365.8			

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	69		70		71		72	
Block:	H201		H302		H301		H302	
Date:	21-Jun-02		21-Jun-02		21-Jun-02		21-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	7:10	7:37	8:36	9:06	9:40	10:10	10:52	11:22
Depth (Meters):	27	27	40	40	35	35	48	42
Latitude (Deg, Min):	53°18.45'	53°17.66'	53°13.79'	53°15.3'	53°16.47'	53°15.35'	53°13.11'	53°14.41'
Longitude (Deg, Min):	131°15.56'	131°14.29'	131°9.4'	131°10.2'	131°8.75'	131°7.7'	131°3.08'	131°4.52'
Duration (Minute):	27		30		30		30	
Direction (Deg, True):	135		343		150		327	
Distance (km):	3.9		5.4		4.4		5.4	
Boat Speed (km/h):			5.9		4.6		5.7	
Locality:Major/Minor	07 / 02		07 / 02		07 / 02		07 / 02	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder								
Butter sole						0.1		
C-o sole		0.1						
Curlfin sole		5		7.4		0.1		
Dover sole								
English sole				1		0.1		0.1
Flathead sole								
Pacific halibut		2		6.7		2.2		12.6
Pacific sanddab								
Petrale sole								
Rex sole								
Rock sole		14		39.3		62		38.9
Sand sole		1		2.8		31		4
Slender sole								
Speckled sandab		0.1				0.1		0.1
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish		2						
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate				15.8		42.4		22
Longnose skate								
Sandpaper skate								
Spiny dogfish		24		61.6		9.4		2.4
Spotted ratfish		13		35.7		2.8		
Roundfish								
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling		0.1						
Lingcod								7.2
Northern ronquil								
Northern spearmose poacher								
Pacific cod		0.1		0.1		0.1		1.5
Pacific herring								
Pacific sand lance				0.1				6.1
Pacific tomcod						0.1		
Poachers								
Pricklebacks								
Red irish lord		0.1						
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback				0.1				
Spotfin sculpin								
Sturgeon poacher				0.5				0.1
Walleye pollock								
Wolf eel								
Wrymouths								
Invertebrate		5.4		34.4		27.9		22.9
Total catch (kg)		55.9		205.5		178.3		117.9

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V Viking Storm, June 10 - 28, 2002.

Set:	73	74	75	76
Block:	H303	H405	H405	H406
Date:	21-Jun-02	21-Jun-02	21-Jun-02	21-Jun-02
Time:	Start 12:17	Start 12:47	Start 16:18	Start 18:01
Depth (Meters):	Finish 80	Finish 79	Finish 139	Finish 141
Latitude (Deg, Min):	53°16.5'	53°15.18'	53°17.35'	53°16.22'
Longitude (Deg, Min):	131°0.14'	131°59.47'	130°51.13'	130°50.28'
Duration (Minute):	30	15	30	23
Direction (Deg, True):	167	154	164	343
Distance (km):	4.6	2.6	4.4	4.1
Boat Speed (km/h):	5.2	5.7		5.9
Locality: Major/Minor	07 / 02	07 / 06	07 / 06	07 / 06
Remarks:	USABLE	USABLE	USABLE	USABLE
Flatfish				
Arrowtooth flounder	15.1	50.3	12.9	43.9
Butter sole				
C-o sole				
Curlfin sole				
Dover sole	39.8	36.3	33.1	5.3
English sole	145	12.3		1
Flathead sole		6.6	48.6	11.4
Pacific halibut	36			
Pacific sanddab	25.4			
Petrale sole	57.9	2.2		0.1
Rex sole	20.3	81	114.7	93.3
Rock sole	9	0.1	0.1	
Sand sole	0.1			
Slender sole		0.1	2.9	6.3
Speckled sandab				
Starry flounder				
Rockfish				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch			1.7	
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish			2	
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish			8.3	
Selachii				
Big skate				0.03
Longnose skate			1.23	
Sandpaper skate				
Spiny dogfish	432.9	7.8	8.6	41.8
Spotted ratfish	30.6	9.7	0.1	8.6
Roundfish				
Bigfin eelpouts	0.1		0.1	
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod	4.4			
Northern ronquil				
Northern spearmose poacher				
Pacific cod	53.2	0.1	1.6	
Pacific herring			0.1	
Pacific sand lance	0.5	0.1	0.1	
Pacific tomcod	2.3	0.1		
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish	0.1		2.6	3
Sculpins				
Shiner perch				
Snake prickleback	0.1			
Spotfin sculpin				
Sturgeon poacher	2	0.1		
Walleye pollock	8.3	0.1	2.8	1
Wolf eel				
Wrymouths				
Invertebrate	24.1	0.3	2.1	2.2
Total catch (kg)	907.2	207.2	243.63	217.93

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V Viking Storm, June 10 - 28, 2002.

Set:	77		78		79		80	
Block:	J205		J202		I301		I302	
Date:	22-Jun-02		22-Jun-02		22-Jun-02		22-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	8:02	8:26	9:35	10:07	11:28		11:51	13:02
Depth (Meters):	86	90	93	75	33	35	40	13:30
Latitude (Deg, Min):	52°54.61'	"	52°56.52'	52°55.36'	53°2.02'	53°2.7'	53°4.43'	53°3.13'
Longitude (Deg, Min):	131°17.92'	"	131°14.1'	131°15.07'	131°5.65'	131°3.4'	131°9.73'	131°9.08'
Duration (Minute):		24		32		30		28
Direction (Deg, True):		057		207		065		160
Distance (km):		3.7		4.4		5.2		
Boat Speed (km/h):				4.6		5.6		
Locality:Major/Minor	07 / 02		07 / 02		07 / 02		07 / 02	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder	0.5							
Butter sole			0.1					
C-o sole								
Curfin sole	2.2		0.4		0.1		2	
Dover sole	5.6		14		0.1			
English sole	117.6		97.3		2.8		0.1	
Flathead sole	1.5		0.9					
Pacific halibut			24.3		44.6		66.2	
Pacific sanddab	92.2		155.9		2.8			
Petrale sole	1		0.1					
Rex sole	6.3		10.6		1			
Rock sole	6.5		29		66.8		45.3	
Sand sole			0.9		15.6		20	
Slender sole								
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish			1.3					
Copper rockfish							0.1	
Greenstriped rockfish								
Pacific ocean perch			0.1					
Pygmy rockfish								
Quillback rockfish			1					
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish	3.1		9.1		0.1		0.1	
Selachii								
Big skate					17			
Longnose skate			5.8					
Sandpaper skate								
Spiny dogfish	6.1		6.4		109.8		127.4	
Spotted ratfish	36.8		57.6		1.1			
Roundfish								
Bigfin eelpouts	0.1							
Bluespotted poacher								
Brown irish lord							0.1	
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod			0.5				0.6	
Northern ronquil								
Northern spearmose poacher								
Pacific cod			4.1		0.1		6.2	
Pacific herring	0.5						0.1	
Pacific sand lance	0.1				7.4		0.1	
Pacific tomcod	3.7		1.8		0.6		16.7	
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.1		1		0.1		0.1	
Walleye pollock			1.2		0.1			
Wolf eel								
Wrymouths								
Invertebrate	2		14		4.6		8.9	
Total catch (kg)	285.9		437.4		274.7		294	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	81		82		83		84	
Block:	I404		I403		I401		J301	
Date:	26-Jun-02		26-Jun-02		26-Jun-02		26-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	5:32	5:47	6:51	7:08	7:35	7:50	8:51	9:07
Depth (Meters):	82	84	55	62	29	31	24	24
Latitude (Deg, Min):	53°6.16'	53°5.7'	53°1.22'	53°0.35'	53°0.78'	53°0.22'	52°58.28'	"
Longitude (Deg, Min):	130°54.48'	130°53.48'	130°52.51'	130°51.75'	130°52.85'	130°52.16'	131°0.44'	"
Duration (Minute):	15		17		15		16	
Direction (Deg, True):	124		148		137		020	
Distance (km):	2.8		3.5		2.2		2.4	
Boat Speed (km/h):	5.9		6.5		4.8		4.8	
Locality:Major/Minor	07 / 06		07 / 02		07 / 02		07 / 02	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder	2.3		1.1					
Butter sole	0.1		0.1				0.1	
C-o sole								
Curlfin sole			0.8		0.1			
Dover sole	0.1		0.7		0.1			
English sole	107.3		158.4		70.9		0.1	
Flathead sole								
Pacific halibut	4.7		14.6				0.8	
Pacific sanddab	188		35.1		2.8		0.1	
Petrale sole	3		2.5		0.1			
Rex sole	3.3		1		0.1			
Rock sole			0.1		12.2		5.6	
Sand sole					0.1			
Slender sole					0.1			
Speckled sandab					0.1		0.1	
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate								
Longnose skate								
Sandpaper skate								
Spiny dogfish	8.5		20.7		0.1		12.3	
Spotted ratfish	7.4		79.3		30.3			
Roundfish								
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod	19.4		14.4					
Northern ronquill								
Northern spearose poacher								
Pacific cod			0.1				0.1	
Pacific herring							1.5	
Pacific sand lance					6.2			
Pacific tomcod	21.2		1.2					
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin							0.1	
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.1							
Walleye pollock							0.1	
Wolf eel					5.3			
Wrymouths								
Invertebrate	0.1		2		0.4		1.3	
Total catch (kg)	365.5		332.1		128.9		22.2	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	85		86		87		88	
Block:	J402		J403		J406		I406	
Date:	26-Jun-02		26-Jun-02		26-Jun-02		26-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	10:08	10:28	10:57	11:12	11:38	11:53	12:28	12:43
Depth (Meters):	48	38	60	60	79	80	104	108
Latitude (Deg, Min):	52°56.35'	52°57.44'	52°57.6'	52°57.64'	52°59.08'	52°59.68'	53°0.64'	53°1.23'
Longitude (Deg, Min):	130°49.21'	130°4.99'	130°47.14'	130°45.97'	130°41.2'	130°41.96'	130°43.65'	130°44.27'
Duration (Minute):		20		15		15		15
Direction (Deg, True):		337		090		315		320
Distance (km):		3.9		2.4		2.6		2.2
Boat Speed (km/h):		6.1		5.4		5.4		4.8
Locality:Major/Minor		07 / 06		07 / 02		07 / 06		07 / 06
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder				0.1		0.8		11
Butter sole		0.1		0.4				
C-o sole								
Curfin sole		0.9						
Dover sole						0.1		0.9
English sole		10.3		0.8		33.4		5.2
Flathead sole								0.6
Pacific halibut		1.5		7		10.8		
Pacific sanddab						5.3		0.1
Petraie sole						6.3		2.3
Rex sole						2.6		56
Rock sole		28.8		8.1		2.2		
Sand sole		3.2		2.9		1.3		0.1
Slender sole		1.6						2.3
Speckled sandab				0.1				
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate				3.4				
Longnose skate								
Sandpaper skate								
Spiny dogfish		5.2		4.2		7.9		55.6
Spotted ratfish		0.7				0.1		8.5
Roundfish								
Bigfin eelpouts								0.1
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod						16.4		3.4
Northern ronquill								
Northern spearnose poacher								
Pacific cod		0.1		0.4				14.5
Pacific herring		0.1						
Pacific sand lance		0.1		0.1				0.1
Pacific tomcod						0.1		0.1
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin		0.1						
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher		0.1		0.1		0.1		
Walleye pollock								
Wolf eel								
Wrymouths								
Invertebrate								
		3.4		0.6		3.4		0.2
Total catch (kg)		56.2		28.2		90.8		161

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V Viking Storm, June 10 - 28, 2002.

Set:	89		90		91		92	
Block:	J504		J504		J505		K403	
Date:	26-Jun-02		26-Jun-02		26-Jun-02		26-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	13:47	14:09	14:39	14:54	15:27	15:42	17:13	17:33
Depth (Meters):	64	62	84	86	101	102	68	71
Latitude (Deg, Min):	52°56.35'	52°57.29'	52°56.4'	52°55.64'	52°56.34'	52°55.45'	52°48.38'	52°47.51'
Longitude (Deg, Min):	130°39.81'	130°39.85'	130°37.95'	130°37.59'	130°34.53'	130°34.52'	130°48.4'	130°49.39'
Duration (Minute):	22		15		15		20	
Direction (Deg, True):	360		165		185		216	
Distance (km):	3.1		2.6		1.5		3.5	
Boat Speed (km/h):	4.8		5.4		6.1		5.6	
Locality: Major/Minor	07 / 06		07 / 06		07 / 06		07 / 02	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder				1.4		6.7		1.3
Butter sole				0.9				
C-o sole								
Curlfin sole								4.1
Dover sole						0.1		
English sole	1.6		2.9			3.5		4.8
Flathead sole								
Pacific halibut	1.6		2.8					15.3
Pacific sanddab			1.2			5.2		0.6
Petrale sole	0.6		50			5.8		11.5
Rex sole	2.9					5.2		1
Rock sole	82.2		62.1			3.4		15.5
Sand sole								
Slender sole	0.6							
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish						22.5		
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
Selachii								
Big skate								
Longnose skate								
Sandpaper skate								
Spiny dogfish	4.3		1.3			29.3		43.3
Spotted ratfish	1.5					14.6		12.7
Roundfish								
Bigfin eelpouts								
Bluespotted poacher						0.1		
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod	31.8					7		
Northern ronquil								
Northern spearnose poacher								
Pacific cod								
Pacific herring	0.1		0.1			0.1		
Pacific sand lance	7.9		6.2			0.1		
Pacific tomcod								
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher								0.1
Walleye pollock								
Wolf eel								
Wrymouths								
Invertebrate	2.9		1.9			6.4		3.3
Total catch (kg)	138		130.8			110		113.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V Viking Storm, June 10 - 28, 2002.

Set:	93		94		95		96	
Block:	K403		K403		K404		K405	
Date:	26-Jun-02		26-Jun-02		26-Jun-02		26-Jun-02	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	18:13	18:33	19:13	19:33	20:18	20:28	21:15	21:35
Depth (Meters):	53	53	68	68	91	88	102	
Latitude (Deg, Min):	52°46' 72"	52°45' 96"	52°42' 45"	52°43' 34"	52°44' 67"	52°45' 26"	52°42' 09"	52°42' 59"
Longitude (Deg, Min):	130°54' 67"	130°55' 72"	130°56' 16"	130°56' 08"	130°47' 3"	130°47' 29"	130°46' 25"	130°44' 85"
Duration (Minute):	20		20		10		20	
Direction (Deg, True):	220		037		360		060	
Distance (km):	3.3		3.5		1.9		3.1	
Boat Speed (km/h):	5.4		5.7		5.6		5	
Locality: Major/Minor	07 / 02		07 / 02		07 / 02		07 / 02	
Remarks:	USABLE		USABLE		USABLE		USABLE	
Flatfish								
Arrowtooth flounder				0.1		0.8		3.4
Butter sole								
C-o sole								
Curlfin sole				0.1				0.1
Dover sole								
English sole		0.1				3.5		2.7
Flathead sole								
Pacific halibut		6		16				6.8
Pacific sanddab		0.1		0.1		11.4		19.2
Petrale sole		1.2				0.7		2.1
Rex sole						0.6		5.1
Rock sole		121.8		4		5		6.6
Sand sole		1.8						
Slender sole						0.1		
Speckled sandab								
Starry flounder								
Rockfish								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish						0.1		
Quillback rockfish						3		
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								6.6
Widow rockfish								
Yelloweye rockfish						0.6		
Yellowtail rockfish								
Selachii								
Big skate		20.9						
Longnose skate								
Sandpaper skate								
Spiny dogfish		5.3		5.2		17.2		11
Spotted ratfish		28		16.7		11.4		2
Roundfish								
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod		17.7		19.1		3.7		0.9
Northern ronquil								
Northern sparrownose poacher								
Pacific cod								0.1
Pacific herring						0.1		
Pacific sand lance								0.1
Pacific tomcod								
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								0.1
Sturgeon poacher		0.1				0.1		0.1
Walleye pollock								0.1
Wolf eel								
Wrymouths								
Invertebrate		0.2		30.7		14.2		0.1
Total catch (kg)		203.2		92		72.5		67.1

Appendix 3. Detailed description and specification of the *F/V Viking Storm*.

Vessel Registration Number	20093
Year constructed	1981
Construction material	Steel
Length	104 Feet
Beam	27 Feet
Draft	12-15 Feet
Gross Tonnage	246
Registered tonnage	115.12
Name and engine type	KTA 37 Cummins
Engine horsepower	980
Fuel consumption	65 liters per hour
Fuel capacity	88,000 liters
Cruising speed	10 Knots
Number of crew (include skipper)	5
Berths / Cabins	14 / 5
Freezing capacity	1,680 cubic feet
Electrical power	110, 240 AC
Echo sounders: Furuno	Model FCV 782 28/50 kHz dual frequency
Furuno	Model FCV 261 50 kHz
Radars: Furuno	FR- 1425 48 mile range
Furuno	FR - 8050 48 mile range
Radios: VHF , ICOM	Sailor - 8220Y8
SSB	IC- M700
GPS/Plotters : Furuno	GPS-30, GPS-50
Charting software: Nobletec	Ver. 4.1
Seaplot	
Net sensors: Scanmar	Model RX 400
Furuno	Model 10A
Elac	
PC Computers with Flat Screen Monitor	IBM
Surface Temperature Sensor	Model T-2000